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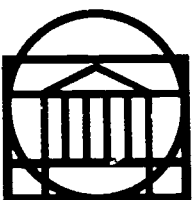
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ABSTRACT

This monograph considers four major socioeconomic indicators: mobility, education, employment, and income. The first chapter of this report summarizes these indicators for the State and provides data which indicate trends in these variables. Each is then separately considered in a chapter where data are provided at the planning district level. Individual chapters are devoted to mobility, education, employment and labor force, occupation, and income. These are followed by chapters analyzing white-nonwhite and urban-rural differentials. The final chapter explores the interrelationships between mobility, education, employment, and income and the impact which changes in some of these variables might have on the others. The two measures of mobility which are used in this analysis are place of birth and place of residence in 1965. The effects on mobility of the high concentration of military personnel and the presence of colleges and universities in certain areas of the state are considered. Data are provided on the educational achievement of Virginia's population. Data on the labor force include the occupational composition of workers, the industrial composition of the labor force, and the rate of labor force participation of various age-race-sex groups of the population. (Author/JM)

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VIRGINIA'S POPULATION: A DECADE OF CHANGE

Socioeconomic Characteristics

William J. Serow and Michael A. Spar
January 1974

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Third in a Series Analyzing the 1970 Census

UD 014 302

Introduction

This monograph is the third volume in the Tayloe Murphy Institute's series of analyses based on the results of the 1970 Census of Population and Housing. The first report analyzes the demographic characteristics of the State; the second presents estimates of net migration by age and race during the 1960-1970 decade for Virginia Planning Districts and SMSAs. As in the second volume, the principal unit of analysis is the planning district. This study considers four major socioeconomic indicators: mobility, education, employment, and income.

The first chapter of this report summarizes these indicators for the State and provides data, which indicate trends in these variables. Each is then separately considered in a chapter where data are provided at the planning district level. Individual chapters are devoted to mobility, education, employment and labor force, occupation and income. These are followed by chapters analyzing white-nonwhite and urban-rural differentials. The final chapter explores the interrelationships between mobility, education, employment, and income and the impact which changes in some of these variables might have on the others.

The two measures of mobility which are used in this analysis are place of birth and place of residence in 1965. The effects on mobility data of the high concentration of military personnel and the presence of colleges and universities in certain areas of the state are considered.

Data are provided on the educational achievement of Virginia's population. Of primary importance is the number of school years completed. This data is causally related to the occupational distribution of the population and, by

inference, to the income level of the population.

Data on the labor force include the occupational composition of workers (that is, the type of work that people do), the industrial composition of the labor force (that is, the principal production service of the employer), and the rate of labor force participation of various age-race-sex groups of the population.

The income analysis in this report primarily concerns the poverty status and distribution of household income of Virginia residents as of 1969.* These data should not be confused with the income estimate series of the Tayloe Murphy Institute. The data for the latter is estimated on the basis of statistics on unemployment insurance, employment, social insurance, income tax, etc., provided by the U.S. Department of Commerce, Bureau of Economic Analysis.**

These variables, notably education, can be directly influenced by policy decisions. Thus, analysis of this nature may be useful in the evaluation of alternative policy proposals. It is for this purpose that this study has been undertaken.

*The Census, taken in 1970, asked for the level of income "last year."

**See Income Estimates: Virginia... 1968 (Charlottesville: Graduate School of Business Administration, Bureau of Population and Economic Research, University of Virginia, 1971) and Income in Virginia... 1959 and 1965 to 1969 (Charlottesville: Graduate School of Business Administration, Bureau of Population and Economic Research, University of Virginia, 1972).

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Chapter I.

Socioeconomic Change in Virginia, 1950-1970

Between 1950 and 1970 there were significant changes in the socioeconomic status of Virginia residents. This chapter reviews trends for the State in the areas of educational achievement, employment, income, and labor force composition.

A. Educational Achievement

The median number of school years completed rose 3.2 years between 1950 and 1970.* In 1950 median years of school completed was 8.5, slightly more than a grade school education. The median increased steadily, and by 1970 it was 11.7 years, almost a complete high school education. (See Table 1.)

Between 1950 and 1970 there was a significant decline in the number of persons having only an eighth grade education. In each decade the share of the population with no more than an eighth grade education declined about 10%, but in absolute numbers the greatest decline (15.6%) occurred between 1960 and 1970.

The number of persons in Virginia who received no more than a high school diploma increased by 135% between 1950 and 1970. The greatest increase (65%) occurred between 1950 and 1960. In 1960 20.7% of the population had earned just a high school diploma, and by 1970 25.2% had done so.

The most spectacular increase occurred among those who completed at least four years of college. Only 6.5% of the population in 1950 had earned at least a college degree compared to 8.4% in 1960 and 12.3% in 1970. In absolute numbers, the number of persons who earned at least an undergraduate degree increased by 166.2% between 1950 and 1970.

B. Labor Force.

The socioeconomic changes which occurred in Virginia between 1950 and 1970 are reflected in the changing com-

position of Virginia's labor force. These changes may be viewed in three ways: the demographic composition of the labor force, the occupational composition, and the industrial composition.

1. Demographic Composition. In 1950 there were 1,305,611 persons in Virginia's labor force. The number increased to 1,532,599 by 1960. A greater increase occurred by 1970, bringing the total Virginia labor force to 1,956,894, an increase of 49.9% over 1950.

The portion of the population in the military increased slightly between 1950 and 1970. Of the 1950 population aged 14 and over 4.5% (108,935 persons) was in the military, compared to 4.8% (133,082) of the 1960 population and 5.1% (175,718) of the 1970 population. Similarly, the civilian labor force increased from 49.8% (1,196,676 persons) in 1950 to 50.8% (1,399,517) in 1960 and 52.1% (1,781,176) in 1970. In 1950 the civilian labor force was 72.7% male and 27.3% female, but by 1960 the female share increased to 33.7% and by 1970 to 39.4%.

The civilian labor force participation rate (that is, the number of persons in the civilian labor force, divided by the total population aged 14 and over) increased gradually from 49.8% in 1950 to 50.8% in 1960 and 52.1% in 1970.

In 1950 the overall rate of participation was higher for nonwhites (53.9%) than whites (48.6%).** The nonwhite male rate (74.0%) was higher than the white male rate (71.3%); the nonwhite female rate (33.8%) was higher than the white female rate (25.6%). Though the 1960 nonwhite labor force participation rate was still higher than the white rate, the white male rate (69.5%) surpassed the nonwhite male rate (66.9%) while the white female rate (32.6%) lagged behind the non-

*The median is that point in the exact middle of the distribution.

**These data may be somewhat misleading due to the absence of standardization, that is, taking into account the differences in the age composition of these groups.

TABLE 1. NUMBER OF SCHOOL YEARS COMPLETED, PERSONS AGED 25 AND OVER, VIRGINIA: 1950, 1960, AND 1970

| Years of School Completed | 1950 | | 1960 | | 1970 | | Percent Change | | |
|---------------------------|-----------|------------------|-----------|------------------|-----------|------------------|----------------|---------|---------|
| | Number | Percent of Total | Number | Percent of Total | Number | Percent of Total | 1950-60 | 1960-70 | 1950-70 |
| 0 | 59,265 | 3.4 | 55,356 | 2.7 | 39,708 | 1.6 | -6.6 | -28.3 | -33.0 |
| 1-4 | 256,105 | 14.7 | 218,164 | 10.5 | 147,707 | 6.0 | -14.8 | -32.3 | -42.3 |
| 5-6 | 257,715 | 14.8 | 254,124 | 12.2 | 203,066 | 8.3 | -1.4 | -20.1 | -21.2 |
| 7 | 231,070 | 13.2 | 228,146 | 11.0 | 212,938 | 8.7 | -1.3 | -6.7 | -7.9 |
| 8 | 152,770 | 8.8 | 178,316 | 8.6 | 184,978 | 7.6 | 16.7 | 3.7 | 21.0 |
| Total | | | | | | | | | |
| Grade School | 897,660 | 51.5 | 878,750 | 42.3 | 748,689 | 30.6 | -2.4 | -15.6 | -17.6 |
| 9-11 | 281,225 | 16.1 | 358,614 | 17.2 | 488,962 | 20.0 | 27.5 | 36.4 | 73.9 |
| 12 | 261,855 | 15.0 | 432,107 | 20.7 | 616,942 | 25.2 | 65.0 | 42.8 | 135.6 |
| Total High School | 543,080 | 31.1 | 790,721 | 37.9 | 1,105,904 | 45.2 | 45.6 | 39.9 | 103.6 |
| 13-15 | 132,855 | 7.6 | 183,428 | 8.8 | 250,838 | 10.3 | 38.1 | 36.8 | 88.8 |
| 16+ | 113,070 | 6.5 | 174,904 | 8.4 | 300,943 | 12.3 | 54.7 | 72.1 | 166.2 |
| Total Post-Secondary | 245,925 | 14.1 | 358,332 | 17.2 | 551,781 | 22.6 | 45.7 | 54.0 | 124.4 |
| Total | 1,745,930 | 100.0 | 2,083,159 | 100.0 | 2,446,082 | 100.0 | 16.5 | 18.2 | 37.7 |
| Medians | 8.5 | | 9.9 | | 11.7 | | | | |

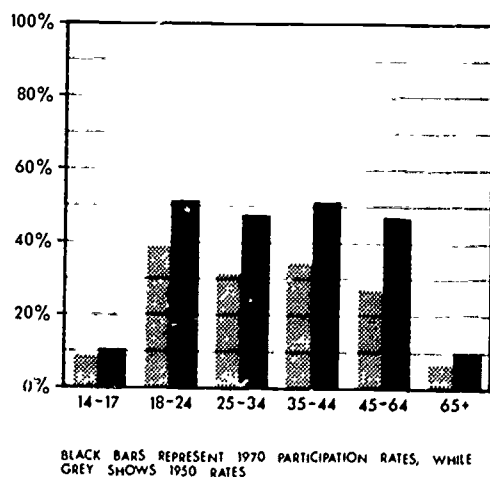
white female rate (39.0%). By 1970 the overall white rate (52.2%) was higher than the nonwhite rate (51.6%). The difference in the male rates had widened; the white male rate was 65.5%, and the nonwhite male rate was 58.0%. The difference between the female rates had narrowed; the white female rate was 39.4%, and the nonwhite female rate was 40.3%.

Though the male labor force participation rate was consistently higher than the female rate between 1950 and 1970, there was a significant decrease in the span between the two. The rate for males was much higher than the rate for females

in 1950 (71.8% for males and 27.4% for females), but by 1960 the male rate had declined slightly to 68.2% while the rate for females had risen considerably to 33.9%. By 1970 the male rate of participation had dropped to 63.7% while the female rate had risen to 40.1%.

The decrease in participation among males could be the result of the increasing incidence of Armed Forces service (8.6% of male Virginians in the entire labor force were military in 1950, compared with 13.7% in 1970) and increasing attendance at post-secondary educational institutions (13.8% of all Virginians aged 18-24 were enrolled in school in 1950 compared with 26.2% in 1970).*

Figure 1. Female Labor Force Participation Rates, by Age: 1950 and 1960



Labor force participation among females was higher at all ages in 1970 than 1950, particularly for women over age 25 and most especially for women between the ages of 45 and 64 (see Figure 1). This suggests that married

*Another factor might well be the consistently increasing incidence of retirement at age 65 and even at younger ages. Seymour Wolfbein's *Working American Society* (Glenview, Ill.: Scott, Foresman and Company, 1971) shows that the retirement rate for men aged 65 had nearly tripled between 1950 and 1960; "...The evidence for the 1960's indicates that this had continued to be the case in more recent years with growing indications, however, that more and more men are beginning to retire at even earlier ages than 65..." (p. 170).

TABLE 2. DEMOGRAPHIC CHARACTERISTICS OF VIRGINIA'S LABOR FORCE: 1950, 1960, AND 1970

| Year | Total | | White Male | | White Female | | Nonwhite Male | | Nonwhite Female | |
|--------------------------------|-----------|---------|------------|---------|--------------|---------|---------------|---------|-----------------|---------|
| | Number | Percent | Number | Percent | Number | Percent | Number | Percent | Number | Percent |
| 1950 | | | | | | | | | | |
| Total Population 14+ | 2,404,426 | 100.0 | 954,534 | 39.7 | 937,160 | 40.0 | 256,265 | 10.7 | 256,467 | 10.7 |
| Number in Labor Force | 1,305,611 | 100.0 | 777,349 | 59.5 | 244,168 | 18.7 | 196,945 | 15.1 | 87,149 | 6.7 |
| Labor Force Participation Rate | | 49.8 | | 71.3 | | 25.6 | | 74.0 | | 33.8 |
| Number in Military | 108,935 | 100.0 | 97,195 | 89.2 | 4,063 | 3.7 | 7,436 | 6.8 | 241 | 0.2 |
| Civilian Labor Force | 1,196,676 | 100.0 | 680,154 | 56.8 | 240,105 | 20.1 | 189,509 | 15.8 | 86,908 | 7.3 |
| Employed Civilian | 1,150,164 | 100.0 | 659,781 | 57.4 | 232,752 | 20.2 | 177,481 | 10.2 | 80,150 | 7.0 |
| Unemployment Rate | | 3.9 | | 3.0 | | 3.1 | | 6.3 | | 7.8 |
| 1960 | | | | | | | | | | |
| Total Population 14+ | 2,753,069 | 100.0 | 1,098,198 | 39.9 | 1,121,750 | 40.8 | 262,322 | 9.5 | 270,799 | 9.8 |
| Number in Labor Force | 1,532,599 | 100.0 | 874,224 | 57.0 | 367,985 | 24.0 | 184,641 | 12.1 | 105,749 | 6.9 |
| Labor Force Participation Rate | | 55.8 | | 68.5 | | 32.6 | | 66.9 | | 39.0 |
| Number in Military | 133,082 | 100.0 | 121,635 | 91.4 | 2,124 | 2.0 | 9,169 | 8.1 | 154 | 0.1 |
| Civilian Labor Force | 1,399,517 | 100.0 | 752,589 | 53.8 | 365,861 | 26.1 | 175,472 | 12.5 | 105,595 | 7.5 |
| Employed Civilian | 1,340,800 | 100.0 | 726,226 | 54.2 | 353,516 | 26.4 | 163,324 | 12.2 | 97,734 | 7.3 |
| Unemployment Rate | | 4.2 | | 3.5 | | 3.4 | | 6.9 | | 7.4 |
| 1970 | | | | | | | | | | |
| Total Population 14+ | 3,418,599 | 100.0 | 1,379,460 | 40.4 | 1,431,984 | 41.9 | 291,658 | 8.5 | 315,497 | 9.2 |
| Number in Labor Force | 1,956,894 | 100.0 | 1,038,161 | 54.1 | 567,235 | 29.0 | 193,815 | 10.0 | 137,683 | 7.0 |
| Labor Force Participation Rate | | 52.1 | | 65.5 | | 39.4 | | 58.0 | | 40.3 |
| Number in Military | 175,718 | 100.0 | 154,256 | 87.8 | 3,298 | 1.9 | 17,727 | 10.1 | 437 | 0.2 |
| Civilian Labor Force | 1,781,176 | 100.0 | 903,905 | 50.8 | 563,937 | 31.7 | 176,088 | 9.9 | 137,246 | 7.7 |
| Employed Civilian | 1,727,111 | 100.0 | 885,555 | 51.3 | 545,247 | 31.6 | 169,009 | 9.8 | 127,300 | 7.4 |
| Unemployment Rate | | 3.0 | | 2.0 | | 3.3 | | 5.8 | | 7.2 |
| | | | | | | | | | | |
| | | | 1960 | | 1970 | | % Change | | | |
| | | | Number | Percent | Number | Percent | 1950-1970 | | | |
| Total Population 14+ | 2,404,426 | 100.0 | 2,753,069 | 100.0 | 3,418,599 | 100.0 | 42.2 | | | |
| Number in Labor Force | 1,305,611 | 54.3 | 1,532,599 | 55.7 | 1,956,894 | 57.2 | 49.9 | | | |
| Number in Military | 108,935 | 4.5 | 133,082 | 4.8 | 175,718 | 5.1 | 61.3 | | | |
| Civilian Labor Force | 1,196,676 | 49.8 | 1,399,517 | 50.8 | 1,781,176 | 52.1 | 48.8 | | | |
| Employed Civilian | 1,150,164 | 47.8 | 1,340,800 | 48.7 | 1,727,111 | 50.5 | 50.2 | | | |

women tended to return to the labor force at a much greater rate in 1970 than 1950. (See Table 2.)

The civilian unemployment rate rose from 3.9% in 1950 to 4.2% in 1960 but dropped to 3% by 1970. Between 1950 and 1970 the male unemployment rate was consistently lower than the female rate (3.7% and 4.3% respectively in 1950, 4.1% and 4.3% in 1960, and 2.4% and 4.1% in 1970), and the white rate remained markedly lower than the nonwhite rate (3.0% and 6.8% in 1950, 3.5% and 7.1% in 1960, and 2.5% and 5.4% in 1970). However, the urban rate (4.7%), which was notably higher than the rural rate (2.7%) in 1950, decreased by 1960 while the rural rate increased. In 1960 the unemployment rate in urban areas was 3.8%, and in rural areas it was 4.8%. Both urban and rural rates decreased by 1970, though the urban rate (2.9%) was still lower than the rural rate (3.3%).

2. Occupational Composition. The most remarkable change in the occupational composition of Virginia's labor force between 1950 and 1970 was the widespread shift from agriculture to other areas of the economy. In 1950 14.3% of the state labor force (164,673 persons) was in agriculture (farmers, farm managers, farm foreman, and farm laborers). By 1960 only 7.2% (96,000) was employed in agriculture. In 1970 agricultural employment accounted for a mere 2.5% of Virginia's labor force. Only 33,297 persons were employed in agriculture.

The greatest increase in employment between 1950 and 1970 was in the white collar segment of the labor force. In 1950 33.5% of employment (385,065 persons)

was in white collar occupations (professional, managerial, clerical, sales). By 1960 these workers accounted for 40.1% of the labor force (537,978 persons), an increase over 1950 of 39.7%. White collar occupations continued to increase in number, and in 1970 806,837 persons (46.7% of the entire labor force) were white collar workers. The rate of increase over the twenty-year period for all white collar occupations was 109.5%: among professionals, it was 177.4%; among managers, 58.1%; among sales personnel, 49.3%; and among clerical employees, 129.4%. Growth in the latter area was concomitant with the pronounced upsurge in labor force participation by women.

There was a significant increase in the number of blue collar workers in Virginia's labor force between 1950 and 1970, although the share of employment in this sector decreased because of the relatively greater increase in white collar employment. In 1950 46.9% of the labor force (539,271 persons) was in blue collar occupations (operators, craftsmen, service workers). By 1960 these workers numbered 600,121, an increase of 11.3% over 1950, but they accounted for only 44.4% of the entire labor force. Blue collar workers numbered 746,428 in 1970, an increase of 24.4% over 1960, but the share of this group in the total labor force declined slightly to 43.2%.

Within the blue collar employment sector, the number of craftsmen and service workers increased substantially between 1950 and 1970. The number of operators increased moderately while the number of nonfarm laborers declined.

TABLE 3. OCCUPATIONAL DISTRIBUTION OF VIRGINIA'S EMPLOYED LABOR FORCE: 1950, 1960, AND 1970

| | 1950 | | 1960 | | 1970 | |
|---------------------------|-----------|---------|-----------|---------|-----------|---------|
| | Number | Percent | Number | Percent | Number | Percent |
| Professional | 94,690 | 8.2 | 153,729 | 11.5 | 262,677 | 15.2 |
| Managerial | 89,230 | 7.8 | 106,297 | 7.9 | 141,070 | 8.2 |
| Clerical | 128,273 | 11.2 | 188,234 | 14.0 | 294,256 | 17.0 |
| Sales | 72,872 | 6.3 | 93,967 | 7.0 | 108,834 | 6.3 |
| Craftsmen | 152,294 | 13.2 | 177,549 | 13.2 | 231,612 | 13.4 |
| Operatives | 223,106 | 19.4 | 240,899 | 18.0 | 278,034 | 16.1 |
| Nonfarm Laborers | 88,125 | 7.7 | 76,519 | 5.7 | 77,428 | 4.5 |
| Farmers | 102,057 | 8.9 | 58,945 | 4.4 | 23,399 | 1.4 |
| Farm Laborers | 62,616 | 5.4 | 36,275 | 2.7 | 19,747 | 1.1 |
| Service Workers | 75,746 | 6.6 | 101,526 | 7.6 | 159,354 | 9.2 |
| Private Household Workers | 43,999 | 3.8 | 50,697 | 3.4 | 35,937 | 2.1 |
| Not Reported | 17,156 | 1.5 | 56,163 | 4.2 | 94,784 | 5.5 |
| Total | 1,150,164 | 100.0 | 1,340,800 | 100.0 | 1,727,132 | 100.0 |

The number of persons employed in the private household sector increased 14.7% from 43,999 in 1950 to 59,461 in 1960. In both years this group accounted for a small share of Virginia's labor force (3.8% in 1950 and 3.4% in 1960). Between 1960 and 1970 the number of private household workers declined by 28.8% to slightly less than 36,000 persons, representing only 2.1% of the state's labor force. Over the two-decade period, employment in private households diminished by 18.3% or 8,062 persons. Data summarizing changes in the occupational distribution of Virginia's work force are given in Table 3.

3. Industrial Composition. The shift in the industrial composition of Virginia's labor force parallels the occupational data. Occupational data tell what members of the labor force do; industrial data describe the principal good or service produced by employers of the labor force. Data summarizing the industrial composition of Virginia's labor force are given in Table 4.

In the years 1950, 1960, and 1970, the largest single sector was manufacturing. This sector grew from 236,704 employees in 1950 (20.58% of employment) to 364,010 employees in 1970 (21.23% of employment). The overall increase in this sector was 53.78% from 1950 to 1970. Employment in durable goods manufacturing grew faster than employment in nondurable goods manufacturing. In 1950, the latter accounted for 61.7% of all employment in manufacturing. By 1970, it had fallen to 55.7%.

Over the twenty-year period, the fastest growing sector was professional and related services. In 1950, employment in this sector was 89,403 or 7.77% of the total. By 1970, it had risen to 269,618 or 15.73% of the total. Employment in this sector increased by 201.53% from 1950 to 1970. Other sectors which grew at a rate faster than the overall level (49.04% in the twenty-year period) include: finance, insurance, and real estate (138.49%); business and repair services (103.24%); public administration (89.01%); wholesale trade (71.44%); and retail trade (51.22%).

Industries which experienced growth, but at a rate lower than the state total include entertainment and recreation services (46.42%); construction (42.33%); and transportation, communication, and other public utilities (19.58%). Finally, employment diminished in three sectors: personal services (1.34%); mining (44.91%); and agriculture, forestry, and fisheries (70.41%).

C. Income

Significant changes occurred in the income level of Virginians between 1950 and 1970. In general, income increased sharply but at a slightly lower pace between 1960 and 1970. In 1950 the median income per family was \$2,644, and by 1960 it had increased by 87.7% to \$4,964. An additional increase of 82.3% between 1960 and 1970 created a median income of \$9,049 in 1969. It should be realized that income data are in current dollars--that is, not adjusted for the diminution of purchasing power (inflation) that has been experienced in recent years. If we convert family income to constant (1967) dollars, we would find that median family income in 1950 would have been \$3,704, and that in 1970 it would be \$8,244. Thus, in terms of the real purchasing power of family income, the change from 1950 to 1970 was 122.6%. (See Table 5.)

Nearly one-fifth of all Virginia families received less than \$1,000 of income in 1950. By 1960 this share of families dropped to 8.9%, and in 1969 only 2.8% had an income less than \$1,000. Furthermore, in 1950 only 2.5% of Virginia families had incomes of \$10,000 or more. The number grew to 13.2% by 1960, and in 1969 a spectacular 43.7% of Virginia families had incomes of at least \$10,000.

In 1970 for the first time, data which show the incidence of poverty in the state were made available. "Poverty" is defined as a level of income below the guidelines established by the Social Security Administration. The poverty level varies according to household size, age and sex of head, and farm-nonfarm residence (see Table 6). The value of the poverty level ranges from \$6,665 for a nonfarm family of seven with a male head to \$1,489 for a single female aged 65 and over living on a farm.

In Virginia 12.3% of all families received income in 1969 which placed them below the poverty guidelines. This amounted to 143,005 families or 575,330 persons. Among these families, mean income was only \$2,025. Additionally, 115,285 single persons, living alone, received income below the poverty level; these 115,285 represent 36.9% of all individuals living by themselves in one person households. All told, some 690,615 Virginians were in a poverty status based on 1969 income; this is 14.9% of the State's enumerated 4,648,494 persons.

TABLE 6. POVERTY INCOME CRITERIA FOR FAMILIES, BY AGE AND SEX OF HEAD,
FARM OR NONFARM RESIDENCE, AND NUMBER OF CHILDREN UNDER AGE 18

| Family Size | None | 1 | 2 | 3 | 4 | 5 | 6 or more |
|----------------------------|---------|---------|---------|---------|---------|---------|--------------|
| Male Head—Nonfarm | | | | | | | |
| 1. Under 65 years old... | \$1,975 | --- | --- | --- | --- | --- | --- |
| 65 years old and over | 1,774 | --- | --- | --- | --- | --- | --- |
| 2. Under 65 years old... | 2,469 | \$2,766 | --- | --- | --- | --- | --- |
| 65 years old and over | 2,216 | 2,766 | --- | --- | --- | --- | --- |
| 3..... | 2,875 | 2,968 | \$3,137 | --- | --- | --- | --- |
| 4..... | 3,790 | 3,847 | 3,715 | \$3,902 | --- | --- | --- |
| 5..... | 4,574 | 4,630 | 4,481 | 4,368 | \$4,462 | --- | --- |
| 6..... | 5,247 | 5,265 | 5,153 | 5,041 | 4,891 | \$4,967 | --- |
| 7 or more..... | 6,609 | 6,665 | 6,535 | 6,422 | 6,274 | 6,049 | \$5,994 |
| Male Head—Farm | | | | | | | |
| 1. Under 65 years old... | \$1,679 | --- | --- | --- | --- | --- | --- |
| 65 years old and over | 1,508 | --- | --- | --- | --- | --- | --- |
| 2. Under 65 years old... | 2,099 | \$2,351 | --- | --- | --- | --- | --- |
| 65 years old and over | 1,884 | 2,351 | --- | --- | --- | --- | --- |
| 3..... | 2,444 | 2,523 | \$2,666 | --- | --- | --- | --- |
| 4..... | 3,222 | 3,270 | 3,158 | \$3,317 | --- | --- | --- |
| 5..... | 3,888 | 3,936 | 3,809 | 3,713 | \$3,793 | --- | --- |
| 6..... | 4,460 | 4,475 | 4,380 | 4,285 | 4,157 | \$4,222 | --- |
| 7 or more..... | 5,618 | 5,665 | 5,555 | 5,459 | 5,333 | 5,142 | \$5,095 |
| Female Head—Nonfarm | | | | | | | |
| 1. Under 65 years old... | \$1,826 | --- | --- | --- | --- | --- | --- |
| 65 years old and over | 1,752 | --- | --- | --- | --- | --- | --- |
| 2. Under 65 years old... | 2,282 | \$2,491 | --- | --- | --- | --- | --- |
| 65 years old and over | 2,190 | 2,491 | --- | --- | --- | --- | --- |
| 3..... | 2,781 | 2,651 | \$2,931 | --- | --- | --- | --- |
| 4..... | 3,641 | 3,771 | 3,753 | \$3,715 | --- | --- | --- |
| 5..... | 4,368 | 4,500 | 4,481 | 4,444 | \$4,294 | --- | --- |
| 6..... | 5,096 | 5,191 | 5,153 | 5,115 | 4,948 | \$4,798 | --- |
| 7 or more..... | 6,403 | 6,497 | 6,478 | 6,422 | 6,255 | 6,124 | \$5,825 |
| Female Head—Farm | | | | | | | |
| 1. Under 65 years old... | \$1,552 | --- | --- | --- | --- | --- | --- |
| 65 years old and over | 1,489 | --- | --- | --- | --- | --- | --- |
| 2. Under 65 years old... | 1,940 | \$2,117 | --- | --- | --- | --- | --- |
| 65 years old and over | 1,862 | 2,117 | --- | --- | --- | --- | --- |
| 3..... | 2,364 | 2,233 | \$2,491 | --- | --- | --- | --- |
| 4..... | 3,095 | 3,205 | 3,190 | \$3,158 | --- | --- | --- |
| 5..... | 3,713 | 3,825 | 3,809 | 3,777 | \$3,650 | --- | --- |
| 6..... | 4,332 | 4,412 | 4,380 | 4,348 | 4,206 | \$4,078 | --- |
| 7 or more..... | 5,443 | 5,522 | 5,506 | 5,459 | 5,317 | 5,205 | \$4,951 |

Source: Census, Public Use Samples of Basic Records From the 1970 Census: Description and Technical Documentation (Government Printing Office, 1972) p. 122.

The incidence of poverty is strongly influenced by the race, age, and sex of the family head and by the place of residence. In 1970 there were more poor families with a white head (88,065) than a nonwhite head (54,940); however, only 9.0% of all families with a white head had incomes below the poverty level compared to 29.2% of families with a nonwhite head. Only 10.6% of families with head aged under 65 were termed poor compared to 25.7% of families with head aged 65 and over; only 11.6% of all families, but 24.2% of poor families, were headed by a person aged 65 and over. Of the 47,505 families (33.2% of all families) headed by a female, some 36.8% were below the poverty level compared to 9.2% of families with a male head. Though only 37.2% of all families in the State lived in rural areas, rural families comprised 53.8% (76,916) of all poor families. Only 9.1% of urban families had incomes below the poverty level compared to 17.8% of rural families.

D. Summary

In summary, then, recent census data have shed considerable light upon the changing status of Virginians. In the twenty years between 1950 and 1970, the median number of school years attained by the average adult (25 years old or over) rose from slightly more than an elementary school education (8.5 years) to near completion of high school (11.7 years). In 1950, only 28.4% of all Virginians (25+) had completed high school; by 1970, this increased to 47.8%.

The median income of Virginia families rose by 242.2% in the two decade period from an initial level of \$2,644 to a terminal level of \$9,049. Only 2.5% of Virginia's families had

income in excess of \$10,000 in 1950, compared with 43.7% in 1970.

Employment in Virginia increased by 49.0% between 1950 and 1970, from 1.15 million in 1950 to 1.71 million in 1970. The demographic, occupational, and industrial composition of the state's labor force shifted dramatically over the period. Females became an increasingly important factor in the state's labor force. In 1950, 27.3% of the labor force was female--27.4% of all females over aged 14 were in the labor force in that year, compared with 71.8% of all males. By 1970, the percentage of the labor force that was female had risen to 39.6% and the labor force participation rate among females had increased to 40.1%.

The occupational and industrial composition of the labor force show a pronounced move out of the agricultural sector. In 1950, 14.3% of the labor force, 164,673 persons, was employed in agricultural occupations (farmers, farm managers, farm foremen, farm laborers); by 1970, this had decreased to 43,146 persons, or 2.5% of the employed labor force. Over the same period, the number of persons engaged in white collar occupations rose from 385,065, or 33.5% of the state's employed labor force in 1950 to 806,837 or 46.7% in 1970.

These shifts are also evident in the industrial composition of the state's labor force. The fastest growing industrial groups (in terms of total employment) between 1950 and 1970 were professional services; finance, insurance, and real estate; business services; and public administration. On the other hand, employment in agriculture, forestry, and fisheries declined by over 70% and employment in mining declined by nearly 50% from 1950 to 1970.

Chapter II.

Mobility

The mobility analysis of this chapter focuses on two factors: place of birth and place of residence in 1965. The data on mobility should not be confused with data on net migration which were presented in Volume II. Net migration represents the balance between those moving into and moving out of an area in a specific time period. Mobility data relates to place of birth or earlier residence for persons living in an area at the time the census was taken.

A. Place of Birth

Place of birth data are useful in determining the longitudinal (lifetime) movement of a population. An area which attracts many new residents is likely to have a relatively low proportion of its population born in the state of residence. On the other hand, an area which does not attract many new residents (and is also probably prone to outmigration) tends to have a relatively high concentration of persons born in the state of residence.

In 1970 slightly more than 2.9 million of the 4,648,494 Virginia residents (62.5%) were born in Virginia. As expected, the highest incidence of non-natives occurred in those areas which had experienced heavy immigration--the Northern Virginia area (Planning District 8) and the Newport News-Hampton area (Planning District 21). In both of these localities more than half of the 1970 resident population was born outside the State. Additionally, in the Norfolk-Virginia Beach-Portsmouth area (Planning District 20) only slightly more than half the population was native to Virginia. These were the only three planning districts in the State with an incidence of non-native population higher than the state average; however, their effect on the state average was great since these three areas represented about 43% of the State's population in 1970. In addition, about two-thirds (67.8%) of the population in the Petersburg-Hopewell area (Planning District 19) was born in Virginia.

A factor which had a significant effect upon these relatively low rates

of Virginia-born residents was the high concentration of military personnel in these four areas. In the entire State of Virginia in 1970 there were 171,983 males and 3,735 females in the Armed Forces. Of these, 162,868 of the males and 3,543 of the females were located in these four areas. The vast majority of these persons were not born in Virginia and consequently tended to inflate the size of the non-native population.

Another significant factor was the presence of a college or university with a high percentage of out of state students. This was most evident in the Thomas Jefferson Planning District (no. 10), site of the University of Virginia. According to the State Council of Higher Education for Virginia,* 4,246 of the University's 9,633 students enrolled in the regular session of the 1969-70 academic year (the period when the census was taken) were from outside the state. No other public institution in the state, except Virginia Military Institute, had such a high proportion. These out of state students represented about 13% of all persons in the planning district born outside Virginia. When faculty, staff, and spouses of students are considered, a large institution can greatly affect the population of an area.** This same factor was in effect in the New River Valley Planning District (no. 4), site of Virginia Polytechnic Institute and State University, although the share of out of state students at VPISU is about half of the University of Virginia.

Despite the importance of military and college populations in some regions in the State, the bulk of migration to or from any given area was related to other causes. In order to suggest the causal nexus between the share of the

*Annual Student Enrollment Report--Controlled Institutions of Higher Education, (Richmond, 1970), p. 18.

18 **This point is also brought out in reference to age composition in A Profile of the Human Resources of Charlottesville-Albemarle (Charlottesville, 1972), pp. 6-9.

population born in the State and the role of migration in changing the size and composition of an area, the simple coefficient of rank correlation between the percentage of the population born in Virginia and the rate of net migration from 1960 to 1970 for all planning districts was calculated. (This statistic determines the degree of association between two ranked scales.) Planning districts were ranked by rate of net migration (from high to low) and by the percentage of the population born in Virginia (from high to low). Since immigration lowers the share born in Virginia, the rank correlation coefficient was expected to be negative. The value of the coefficient was $-.7716$, which differed significantly from zero at the .01 level of confidence (that is, there were more than 99 chances out of one hundred that this difference was a true one and not a random occurrence).

B. Residence in 1965

Another measure of mobility was the volume of interstate immigration that occurred between 1965 and 1970. This measure shows what portion of the population of an area was made up of recent newcomers from out of state and from which portion of the country (other South, Northeast, North Central, and West) these newcomers came.

Of the 3,936,536 Virginians over age 5 (in 1970) whose residence was reported to be in the United States in 1965, 3,374,701 or 85.7% lived in Virginia. Of the remaining 561,835, 265,754 (or 47.3%) lived in other southern states (in 1965), 125,743 (or 22.4%) lived in the Northeast, 90,817 (or 16.2%) lived in north central states, and the remaining 79,521 (or 14.1%) lived in the West.*

In areas of rapid population flux, such as Northern Virginia and Tidewater, only 70 to 80% of the 1970 population lived in Virginia in 1965. Other areas with a relatively high incidence of out of state newcomers included the Petersburg, Fredericksburg, and Charlottesville areas. In areas of slow or negative population growth, the share of residents who lived in Virginia in 1965 tended to be about 95%. Interestingly enough, several metropolitan areas of the State, such as Richmond, Roanoke, and Lynchburg, were characterized by a relative lack of interstate immigration in the period from 1965 to 1970.

In Virginia planning districts a majority of immigrants were from the South in all cases except in those areas

of high out of state immigration, listed above and Planning District 18, consisting of Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex counties. This district had the highest portion of immigrants (33.4%) from the Northeast. This fact, coupled with high rates of immigration observed for older whites,** suggests that this area might have been serving as a retirement destination by 1970. Migration from the Northeast was also relatively high (more than 25% of all interstate immigrants to the district from 1965 to 1970) in the planning districts centering on Charlottesville, Lynchburg, Farmville, and the Eastern Shore.

Migration from the North Central States was exceptionally high (27.1%) in extreme Southwest Virginia (Planning District 1). It was somewhat higher than average in Planning District 2 (also in Southwest Virginia) as well as in the four areas with a heavy concentration of military population (Northern Virginia, Petersburg, Newport News-Hampton, and Norfolk-Virginia Beach-Portsmouth). These same four areas also had the greatest influx of migrants from western states.

In summary, the two measures employed here, state of birth and residence in 1965, appear to be closely correlated. Areas with a relatively low proportion of native Virginians tended to be the same areas with a relatively large number of interstate immigrants during the 1965-1970 period. Furthermore, these same areas tended to attract migrants from throughout the country to a much greater extent than did other areas in the State. The migrants in these latter areas more likely originated in other southern states. (See Table 7.)

*The composition of these areas is as follows: South--Delaware, Maryland, District of Columbia, West Virginia, Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Kentucky, Mississippi, Tennessee, Arkansas, Louisiana, Oklahoma, and Texas; North-east--Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont, New Jersey, New York, and Pennsylvania; North Central--Illinois, Indiana, Michigan, Ohio, Wisconsin, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota; West--Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming, Alaska, California, Hawaii, Oregon, and Washington.

**See Virginia's Population: A Decade of Change. Net Migration for State Planning Districts (Charlottesville, University of Virginia, 1972), p. 27.

TABLE 7. STATE OF BIRTH OF THE POPULATION AND RESIDENCE IN 1965, VIRGINIA, BY PLANNING DISTRICTS

| Area | 1970 Population | State of Birth | | Population 5+ With 1965 Residence Reported in U.S. | Percent Living In Virginia | Percent Living in Other States | | Residence in 1965 | | Percent Living in North Central States | | Percent Living in West |
|-----------------------|--------------------|--------------------------------|----------------------|---|-------------------------------------|---|--------------------------------------|------------------------------------|---------------------------------|--|-----|------------------------------|
| | | Percent Born in Virginia | Percent Elsewhere | | | Percent Living in Other States | Percent Living in Northeast | Percent Living in Central | Percent Living in West | | | |
| | | | | | | | | | | | | |
| Lencisco | 84,645 | 83.7 | 16.3 | 73,513 | 94.5 | 5.5 | 3.4 | 0.2 | 1.5 | 1.5 | 0.4 | 0.4 |
| Cumberland Plateau | 112,497 | 83.6 | 16.4 | 96,847 | 94.2 | 5.8 | 4.1 | 0.3 | 1.1 | 1.1 | 0.3 | 0.3 |
| Mount Rogers | 159,412 | 82.2 | 17.8 | 138,048 | 93.8 | 6.2 | 4.7 | 0.5 | 0.7 | 0.7 | 0.3 | 0.3 |
| New River Valley | 114,833 | 78.4 | 21.6 | 98,649 | 90.8 | 9.2 | 5.3 | 1.6 | 1.4 | 1.4 | 0.9 | 0.9 |
| Fifth | 231,175 | 78.0 | 22.0 | 199,112 | 92.2 | 7.8 | 5.0 | 1.2 | 1.1 | 1.1 | 0.5 | 0.5 |
| Central Shenandoah | 186,306 | 79.3 | 20.7 | 161,994 | 92.4 | 7.6 | 4.2 | 1.8 | 1.0 | 1.0 | 0.6 | 0.6 |
| Lord Fairfax | 106,372 | 78.6 | 21.4 | 94,446 | 93.8 | 6.2 | 4.2 | 1.1 | 0.7 | 0.7 | 0.2 | 0.2 |
| Northern Virginia | 921,237 | 30.3 | 69.7 | 718,673 | 70.4 | 29.6 | 12.5 | 6.9 | 4.9 | 4.9 | 5.2 | 5.2 |
| Rappahannock-Rapidan | 72,222 | 78.2 | 21.8 | 61,029 | 93.8 | 6.2 | 3.3 | 1.5 | 0.8 | 0.8 | 0.6 | 0.6 |
| Thomas Jefferson | 115,235 | 73.1 | 26.9 | 97,870 | 88.5 | 11.5 | 5.8 | 3.6 | 1.4 | 1.4 | 0.7 | 0.7 |
| Central Virginia | 165,997 | 83.3 | 16.7 | 144,104 | 94.5 | 5.5 | 3.0 | 1.4 | 0.7 | 0.7 | 0.4 | 0.4 |
| West Piedmont | 217,874 | 83.8 | 16.2 | 187,732 | 95.3 | 4.7 | 3.5 | 0.7 | 0.4 | 0.4 | 0.2 | 0.2 |
| Southside | 82,563 | 87.4 | 12.6 | 72,181 | 95.5 | 4.5 | 3.1 | 0.9 | 0.3 | 0.3 | 0.2 | 0.2 |
| Piedmont | 76,245 | 85.8 | 14.2 | 65,822 | 96.0 | 4.0 | 2.2 | 1.1 | 0.5 | 0.5 | 0.2 | 0.2 |
| Richmond Regional | 547,542 | 73.5 | 26.5 | 462,462 | 92.3 | 7.7 | 4.5 | 1.7 | 1.0 | 1.0 | 0.5 | 0.5 |
| Radco | 77,425 | 71.1 | 28.9 | 64,463 | 88.1 | 11.9 | 5.9 | 2.9 | 1.9 | 1.9 | 1.3 | 1.3 |
| Northern Neck | 36,348 | 84.8 | 15.2 | 32,260 | 94.9 | 5.1 | 3.6 | 1.2 | 0.0 | 0.0 | 0.3 | 0.3 |
| Middle Peninsula | 47,609 | 84.7 | 15.3 | 41,826 | 96.4 | 3.6 | 1.7 | 1.2 | 0.5 | 0.5 | 0.2 | 0.2 |
| Crater | 161,059 | 67.8 | 32.2 | 131,933 | 86.6 | 13.4 | 6.4 | 2.7 | 2.8 | 2.8 | 1.5 | 1.5 |
| Southeastern Virginia | 769,371 | 51.7 | 48.3 | 632,150 | 79.4 | 20.6 | 8.4 | 5.1 | 3.7 | 3.7 | 3.4 | 3.4 |
| Peninsula | 319,081 | 49.5 | 50.5 | 249,113 | 78.1 | 21.9 | 10.4 | 4.4 | 3.8 | 3.8 | 3.6 | 3.6 |
| Accomack-Norhampton | 43,446 | 84.4 | 15.6 | 37,862 | 95.2 | 4.8 | 3.0 | 1.4 | 0.2 | 0.2 | 0.2 | 0.2 |
| State | 4,648,494 | 62.5 | 37.5 | 3,862,089 | 85.7 | 14.3 | 6.8 | 3.2 | 2.3 | 2.3 | 2.0 | 2.0 |

Chapter III.

Educational Achievement

Two types of data are used in this analysis of educational achievement: the median number of school years completed and the percentage distribution of different levels of educational achievement. The data are for Virginians 25 and over in 1970.

A. Median Number of School Years

The state median number of school years completed, 11.7, was higher than the figure recorded in any single planning district, with the exception of Northern Virginia (13.1 years) and Peninsula (12.6 years). Generally, this statistic was higher in metropolitan areas; the five planning districts which had the highest median number of school years completed were either fully or predominately metropolitan.

The median number of school years completed differed by sex. For the State and for a majority of the planning districts, the median level of educational achievement was higher among females than males. However, in the two planning districts with a median level of education greater than the state average, this relationship was reversed--that is, the median level was higher for males.

B. Distribution of Educational Achievement

The distribution of persons over age 25 by years of school completed in Northern Virginia was also quite different from that of the remainder of the State. This area had the lowest percentage of persons with no education (0.48%) and the lowest percentage of persons with some education but less than a high school education (24.68%). Additionally, this area had the highest percentage of persons with a high school diploma (31.92%), those with 1-3 years of post-secondary education (16.14%), and those with four or more years of college (26.78%). Although Northern Virginia accounted for only 19.6% of all persons in the State aged 25 and over, 42.4% of all such persons with four or more years of post-secondary education lived there.

This is indicative of the tendency for well-educated persons to be grouped in metropolitan areas. The state total of 12.30% of the population aged 25 and over with 4 or more years of post high school education experience may have been somewhat inflated by Northern Virginia. If all of the State except Northern Virginia were considered, only 8.76% of all persons over age 25 would have four or more years of education beyond the high school level. Individual planning districts which exceeded this total by more than 10% (i.e., with at least 9.64% of the population aged 25 and over having four or more years of post-secondary education) include New River Valley Planning District (no. 4) (10.26%); Thomas Jefferson Planning District (no. 10) (15.70%); Richmond Regional Planning District (no. 15) (12.07%); and Peninsula Planning District (no. 21) (12.05%). These areas include two large metropolitan areas (Richmond and Newport News-Hampton) and two relatively large University communities (VPISU in Blacksburg and UVA in Charlottesville).

In comparing educational achievement by sex, there was a higher proportion of males with no education (1.95%) and less than a full high school education (51.51%) than females (1.32 and 49.76%, respectively). On the other hand, there was also a greater proportion of males with four or more years of post-secondary education (15.60%) than females (9.30%). In brief, the educational composition of males was more skewed at both ends of its distribution than that of females (see Figure 2 and Table 8).

Figure 2. Percentage Distribution of Years of School Completed, by Sex; Virginia: 1970

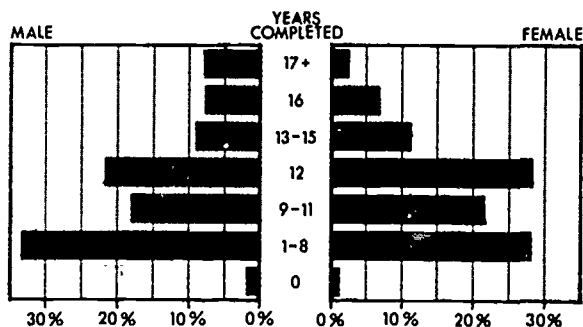


TABLE 8. EDUCATION CHARACTERISTICS OF VIRGINIA, BY PLANNING DISTRICTS: 1970

| Area | Population 25+ | Median Years of School | Percent With No School | Percent With 1-11 Years | Percent With 12 Years | Percent With 13-15 Years | Percent With 16 Years | Percent With 17+ Years | Median School Years Males | Median School Years Females |
|-----------------------|-------------------|---------------------------------|------------------------------|----------------------------------|-----------------------------|-----------------------------------|-----------------------------|------------------------------|------------------------------------|--------------------------------------|
| | | | | | | | | | | |
| Lenowisco | 47,563 | 8.1 | 2.91 | 73.34 | 15.84 | 3.98 | 2.75 | 1.17 | 7.8 | 8.3 |
| Cumberland Plateau | 57,963 | 8.1 | 3.09 | 73.43 | 14.49 | 5.60 | 2.42 | 0.98 | 7.7 | 8.4 |
| Mount Rogers | 91,271 | 9.1 | 2.11 | 69.17 | 17.20 | 6.70 | 3.21 | 1.61 | 8.6 | 9.5 |
| New River Valley | 57,894 | 10.5 | 1.78 | 57.66 | 22.08 | 8.21 | 5.35 | 4.91 | 10.3 | 10.7 |
| Fifth | 131,889 | 11.6 | 1.11 | 49.37 | 29.34 | 11.02 | 6.24 | 2.93 | 11.4 | 11.8 |
| Central Shenandoah | 101,761 | 10.8 | 1.68 | 55.37 | 24.59 | 8.96 | 5.56 | 3.84 | 10.4 | 11.2 |
| Lord Fairfax | 60,671 | 10.2 | 1.49 | 61.23 | 24.39 | 7.21 | 3.81 | 1.88 | 9.6 | 10.7 |
| Northern Virginia | 480,573 | 13.1 | 0.48 | 24.68 | 31.92 | 16.14 | 14.26 | 12.52 | 13.7 | 12.6 |
| Rappahannock-Rapidan | 39,457 | 9.7 | 3.01 | 60.37 | 22.08 | 7.64 | 4.64 | 2.26 | 9.0 | 10.4 |
| Thomas Jefferson | 61,077 | 11.0 | 3.22 | 52.99 | 20.09 | 8.96 | 7.16 | 8.54 | 10.6 | 11.3 |
| Central Virginia | 91,565 | 10.2 | 3.69 | 57.77 | 22.49 | 8.00 | 5.17 | 2.92 | 9.7 | 10.6 |
| West Piedmont | 117,957 | 9.6 | 2.67 | 64.62 | 20.89 | 6.40 | 3.62 | 1.80 | 9.2 | 9.9 |
| Southside | 44,123 | 9.1 | 2.63 | 69.14 | 17.37 | 6.12 | 3.08 | 1.66 | 8.3 | 9.9 |
| Piedmont | 40,859 | 9.0 | 3.78 | 67.79 | 15.89 | 6.38 | 4.03 | 2.13 | 8.2 | 9.8 |
| Richmond Regional | 300,035 | 11.4 | 1.16 | 52.72 | 23.26 | 10.78 | 7.62 | 4.45 | 11.2 | 11.6 |
| Radco | 39,511 | 10.8 | 1.45 | 57.82 | 24.73 | 6.77 | 5.28 | 3.95 | 10.4 | 11.2 |
| Northern Neck | 21,247 | 9.4 | 2.38 | 64.20 | 20.52 | 6.83 | 3.77 | 2.30 | 8.5 | 10.2 |
| Middle Peninsula | 27,642 | 10.1 | 1.90 | 60.17 | 23.15 | 7.85 | 4.57 | 2.38 | 9.2 | 11.0 |
| Crater | 80,480 | 10.4 | 2.50 | 58.52 | 23.08 | 8.28 | 5.27 | 2.36 | 10.2 | 10.6 |
| Southeastern Virginia | 371,988 | 11.3 | 1.49 | 52.59 | 27.30 | 9.72 | 5.69 | 3.22 | 11.4 | 11.4 |
| Peninsula | 154,781 | 12.0 | 1.28 | 46.49 | 29.02 | 11.17 | 7.60 | 4.45 | 12.1 | 12.0 |
| Accomack-Norhampton | 25,685 | 9.4 | 2.89 | 66.02 | 19.14 | 7.12 | 3.27 | 1.55 | 8.7 | 10.0 |
| State | 2,446,082 | 11.7 | 1.62 | 50.60 | 25.22 | 10.25 | 7.22 | 5.08 | 11.4 | 11.8 |

Chapter IV

Employment and Labor Force

A. Labor Force Participation

The labor force participation rate is the percentage of population aged 16 and over which is in the civilian labor force. Labor force participation in an area is dependent upon the relative number of job opportunities and intervening variables, such as military service or college enrollment, which tend to limit labor force participation. Additionally, the age composition of a population can have a significant effect upon the labor force participation rate. For example, a high proportion of persons aged 65 and over would contribute to a low labor force participation rate.

In Virginia 67.9% of all males aged 16 and over and 42.1% of all similarly aged females were in the labor force as of April 1, 1970. The amount of variation across the State was considerable. The planning district with the lowest labor force participation rate among males was the Southeastern Virginia Planning District (no. 20), which includes the Norfolk-Virginia Beach-Portsmouth metropolitan area where only 52.9% of all males aged 16 and over participated in the labor force (see Table 9). The reason for the low rate was the high concentration of military personnel in the area which by definition is not accounted for in the labor force participation rate. This factor was also very evident in the Crater Planning District (no. 19), site of Fort Lee, where the male labor force participation rate was 57.9% and in the Peninsula Planning District (no. 21) where it was only 59.7%.

The effect of a large university in a relatively small area was quite evident in the New River Valley Planning District (no. 4), site of Virginia Polytechnic Institute and State University, and the Thomas Jefferson Planning District (no. 10), site of the University of Virginia. In these areas, male college students accounted for approximately 20% of all males over the age of 15. Consequently, labor force participation rates in these two areas were relatively low--68.7% in Planning District 4 and 67.6% in Planning District 10.

Several areas with a relatively large number of older persons in the population also had low labor force participation rates. This was particularly true in the Lenowisco Planning District (no. 1) where 10.6% of all males were aged 65 and over and the labor force participation rate was only 62.9%; Piedmont Planning District (no. 14) (11.0% and 69.2% respectively); Northern Neck Planning District (no. 17) (13.2% and 67.4%); and to a lesser extent, the Accomack-Northampton Planning District (no. 22) (13.2% and 70.8%).

Labor force participation rates among females were somewhat less than those for males in all cases. The state labor force participation rate among women aged 16 and over was 42.1%, or nearly two-thirds of the observed male rate of 67.9%. As noted in the introductory chapter, the labor force participation rate for women increased considerably between 1950 and 1970.*

As was true of males, there was considerable variation in labor force participation among females. However, there is no apparent explanation for these differences. The highest rates were found in two large metropolitan areas--the Virginia portion of the Washington, D.C. Standard Metropolitan Statistical Area (Planning District 8) with 47.4% and Planning District 15 (which encompasses the Richmond Standard Metropolitan Statistical Area) with 47.0%. Yet, the second largest metropolitan area in the state, Norfolk-Virginia Beach-Portsmouth (contained in Planning District 20) had a low rate of 38.5%.

*Rates in this chapter pertain strictly to the population aged 16 and over. In the introductory chapter, where changes in the past two decades were considered, the base of analysis was the population aged 14 and over. Consequently, the rates mentioned in this chapter are not strictly comparable with those analyzed in the first chapter. This difference is due to changes in published census data in the 1970 census.

As for males, college attendance and advanced age (over 65) depressed the female labor force participation rate. Also, the presence of preschool children in a household tended to decrease the rate. College attendance appears to have been a significant factor in the Piedmont Planning District (no. 14), site of Longwood College in Farmville with 38.3%; the Radco Planning District (no. 16), site of Mary Washington College in Fredericksburg with 38.4%; and perhaps New River Valley Planning District (no. 4), site of Virginia Polytechnic Institute and State University and Radford College, 40.1%. As was the case for males, college enrollment had a relatively large effect when the number of college students was large relative to the population as a whole. When this is not the case, the effect is minimal. For example, The Central Virginia Planning District (no. 11) contains two well known women's colleges (Sweet Briar College and Randolph Macon

College for Women), yet the female labor force participation rate was a relatively high 43.8%.

The effect of a relatively large number of aged persons in the population was evident in the Lenowisco Planning District (no. 1) (12.6% of the female population was aged 65 and over; labor force participation rate of 22.9%); Mount Rogers Planning District (no. 3) (12.3% and 38.4%); Rappahannock-Rapidan Planning District (no. 9) (12.4% and 38.8%); Piedmont Planning District (no. 14) (13.1% and 38.3%); Northern Neck Planning District (no. 17) (15.5% and 37.8%); and Middle Peninsula Planning District (no. 18) (14.9% and 35.7%). However, in the Eastern Shore Planning District (no. 22), which had the highest percentage among all planning districts of women aged 65 and over (16.8%), the female labor force participation was a high 42.7%.

TABLE 9. EMPLOYMENT AND LABOR FORCE CHARACTERISTICS OF VIRGINIA, BY PLANNING DISTRICTS: 1970

| Area | Total Population Aged 16+ | Civilian Labor Force | Labor Force Participation Rate | Percent of Civilian Labor Force Unemployed |
|--------------------|---------------------------------|----------------------------|--------------------------------------|---|
| Lenowisco | | | | |
| Male | 28,220 | 17,740 | 62.9 | 4.3 |
| Female | 31,538 | 7,235 | 22.9 | 5.4 |
| Total | 59,758 | 24,975 | 41.8 | 4.5 |
| Cumberland Plateau | | | | |
| Male | 36,685 | 23,511 | 64.1 | 3.8 |
| Female | 38,626 | 9,016 | 23.3 | 6.1 |
| Total | 75,311 | 32,527 | 43.2 | 4.4 |
| Mount Rogers | | | | |
| Male | 54,057 | 38,230 | 70.7 | 3.8 |
| Female | 60,363 | 23,187 | 38.4 | 4.6 |
| Total | 114,420 | 61,417 | 53.7 | 4.1 |
| New River Valley | | | | |
| Male | 41,529 | 28,523 | 68.7 | 3.2 |
| Female | 42,419 | 17,012 | 40.1 | 5.4 |
| Total | 83,948 | 45,535 | 54.2 | 4.0 |
| Fifth | | | | |
| Male | 77,030 | 59,172 | 76.8 | 1.8 |
| Female | 88,301 | 36,565 | 41.4 | 3.4 |
| Total | 165,331 | 95,737 | 57.9 | 2.4 |
| Central Shenandoah | | | | |
| Male | 63,233 | 47,511 | 75.1 | 2.1 |
| Female | 70,510 | 30,364 | 43.1 | 3.4 |
| Total | 133,743 | 77,875 | 58.2 | 2.6 |
| Lord Fairfax | | | | |
| Male | 35,900 | 27,642 | 77.0 | 2.4 |
| Female | 39,466 | 16,589 | 42.0 | 4.6 |
| Total | 75,366 | 44,231 | 58.7 | 3.2 |
| Northern Virginia | | | | |
| Male | 304,090 | 213,967 | 70.4 | 1.9 |
| Female | 322,913 | 153,106 | 47.4 | 2.6 |
| Total | 627,003 | 367,073 | 58.5 | 2.2 |

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TABLE 9. EMPLOYMENT AND LABOR FORCE CHARACTERISTICS OF VIRGINIA, BY
PLANNING DISTRICTS: 1970 (Continued)

| Area | Total Population Aged 16+ | Civilian Labor Force | Labor Force Participation Rate | Percent of Civilian Labor Force Unemployed |
|-----------------------|---------------------------------|----------------------------|--------------------------------------|---|
| Rappahannock-Rapidan | | | | |
| Male | 24,146 | 18,269 | 75.7 | 1.9 |
| Female | 25,072 | 9,736 | 38.8 | 2.8 |
| Total | 49,218 | 28,005 | 56.9 | 2.2 |
| Thomas Jefferson | | | | |
| Male | 41,516 | 28,067 | 67.6 | 2.4 |
| Female | 40,471 | 18,057 | 44.6 | 2.6 |
| Total | 81,987 | 46,124 | 56.3 | 2.5 |
| Central Virginia | | | | |
| Male | 54,578 | 41,132 | 75.4 | 2.0 |
| Female | 62,077 | 27,177 | 43.8 | 3.0 |
| Total | 116,655 | 68,309 | 58.6 | 2.4 |
| West Piedmont | | | | |
| Male | 71,535 | 55,780 | 78.0 | 1.8 |
| Female | 79,130 | 36,900 | 46.6 | 4.7 |
| Total | 150,665 | 92,680 | 61.5 | 2.9 |
| Southside | | | | |
| Male | 26,867 | 19,083 | 71.0 | 2.6 |
| Female | 29,284 | 11,826 | 40.4 | 6.0 |
| Total | 56,151 | 30,909 | 55.1 | 3.9 |
| Piedmont | | | | |
| Male | 25,019 | 17,312 | 69.2 | 2.8 |
| Female | 27,891 | 10,673 | 38.3 | 5.2 |
| Total | 52,910 | 27,985 | 52.9 | 3.7 |
| Richmond Regional | | | | |
| Male | 178,292 | 137,686 | 77.2 | 1.7 |
| Female | 207,335 | 97,458 | 47.0 | 2.9 |
| Total | 385,627 | 235,144 | 61.0 | 2.2 |
| Radco | | | | |
| Male | 25,657 | 17,970 | 70.0 | 1.5 |
| Female | 27,563 | 10,588 | 38.4 | 3.2 |
| Total | 53,220 | 28,558 | 53.7 | 2.1 |
| Northern Neck | | | | |
| Male | 12,215 | 8,232 | 67.4 | 5.2 |
| Female | 13,373 | 5,052 | 37.8 | 7.1 |
| Total | 25,588 | 13,284 | 51.9 | 6.0 |
| Middle Peninsula | | | | |
| Male | 16,264 | 11,819 | 72.7 | 1.7 |
| Female | 17,430 | 6,229 | 35.7 | 4.5 |
| Total | 33,694 | 18,048 | 53.6 | 2.7 |
| Crater | | | | |
| Male | 57,525 | 33,293 | 57.9 | 2.2 |
| Female | 53,732 | 22,200 | 41.3 | 4.5 |
| Total | 111,257 | 55,493 | 49.9 | 3.1 |
| Southeastern Virginia | | | | |
| Male | 275,727 | 148,568 | 53.9 | 2.5 |
| Female | 253,957 | 97,769 | 38.5 | 5.9 |
| Total | 529,684 | 246,337 | 46.5 | 3.9 |
| Peninsula | | | | |
| Male | 110,693 | 66,035 | 59.7 | 2.5 |
| Female | 106,353 | 43,315 | 40.7 | 5.1 |
| Total | 217,046 | 109,350 | 50.4 | 3.6 |
| Accomack-Northampton | | | | |
| Male | 14,181 | 10,033 | 70.8 | 4.7 |
| Female | 16,638 | 7,111 | 42.7 | 13.7 |
| Total | 30,819 | 17,144 | 55.6 | 8.4 |
| State | | | | |
| Male | 1,574,959 | 1,069,536 | 67.9 | 2.3 |
| Female | 1,654,442 | 697,204 | 42.1 | 4.0 |
| Total | 3,229,401 | 1,766,740 | 54.7 | 3.0 |

The effect of the presence of young children is generally to depress labor force participation among females. As the data in Table 10 show, the labor force participation rate of women with children under 5 years of age was 33.8%, while that for women without young children was 44.2%. A similar relationship held in most planning districts of the state. In those districts where the relationship was reversed, it is possible that the age distribution of women with young children was sufficiently different from that of women without young children to produce this result. That is, that in these areas, women with young children may have tended to be in the peak age groups of labor force participation, while those without young children may have tended to be in age groups characterized by lower rates of labor force participation.

As expected, areas with a high concentration of women with children under age six generally had a low overall rate of labor force participation. There was one significant exception. The Northern Virginia area, with the second highest incidence of women with young children (21.7%) had the highest overall rate of labor force participation --47.4%. A contributing factor to this anomaly may have been the wide differential in labor force participation rates between women with and without young children. Women with children between the ages of zero and five had a relatively low rate of participation--only 29.4%. On the other hand, over half of the women without young children, 52.4% were participating in the labor force. This disparity was also in evidence in the Cumberland Plateau, Southeastern Virginia, and Peninsula Planning Districts (nos. 2, 20 and 21), although the overall rates of participation were much lower in these three areas.

In summary, several intervening variables, including military service, college attendance, old age, and maternity, limit labor force participation. In an effort to remove these factors from analysis and determine what might be called a true labor force participation rate (and hopefully a measure of job opportunity in areas across the state), the data in Table 11 show the number of Virginians over age 16, the number in military service, the number in colleges, the number over age 65, and half of those women with children under six. The latter element clearly introduces some bias since the assumption is made without empirical basis that half of these women would participate if they had the opportunity. This is a source of bias because the actual rate is nearly 50% in the West

Piedmont, Southside, Piedmont, and Accomack-Northampton Districts (nos. 12, 13, 14, and 22), but less than 30% in Lenowisco, Cumberland Plateau, Northern Virginia, and Southeastern Virginia (nos. 1, 2, 8, and 20).

The data in Table 11 show that the true state labor force participation rate was 73.84%. While the assumptions implicit in the derivation of this figure--namely that those in the military, in college, or over age 65 were not in the labor force--are clearly invalid to some extent*, the exclusion of these categories as well as some women with young children removed most of the obvious factors which inhibit labor force participation.

The data in Table 11 show that removal of persons relatively unlikely to be in the labor force considerably increased the overall labor force participation rate for the State 'from 54.7% to 73.8% and all areas in the State. The two planning districts in extreme Southwest Virginia had exceptionally low rates of labor force participation, suggesting that there was a dearth of job opportunities in the area. To a lesser extent, this also appears to have been true in the Mount Rogers, Southside, Northern Neck and Middle Peninsula districts (nos. 3, 13, 17, and 18). In areas with a heavy concentration of military personnel, the rate was also relatively low, perhaps suggesting that military dependents were less likely to have participated in the labor force than were civilians of comparable status.

B. Unemployment

An unemployed person is defined as a civilian who has no job, is actively seeking work, and is available when a job is found.** The rate of unemployment is defined as the percentage of persons in the labor force who are actively seeking work. For the entire state, 3.0% of all members of the labor force

*The method of collecting the census prevented a person in military service from being included in the civilian labor force. However, college students working full or part time or looking for work were included, as were all persons aged 65 and over either working or actively seeking work.

**U.S. Department of Labor, Bureau of Labor Statistics, How the Government Measures Unemployment (Washington: 1967), p. 3.

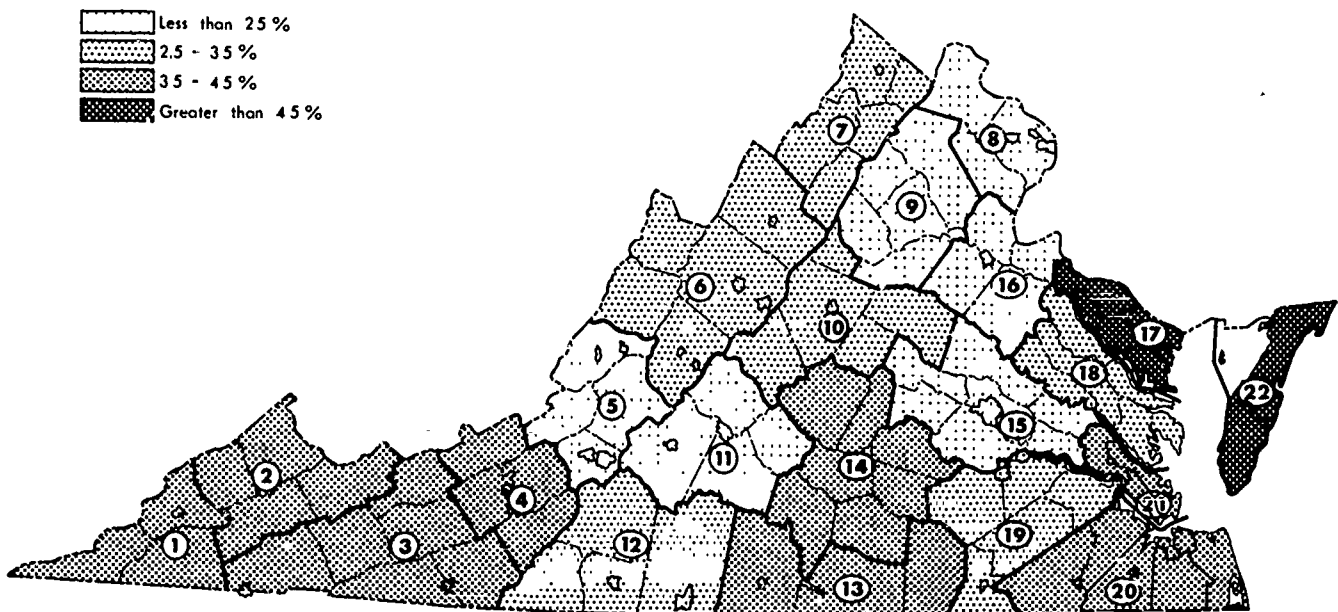
TABLE 10. LABOR FORCE PARTICIPATION RATES OF WOMEN, BY PRESENCE OF CHILDREN AGED 0-5, VIRGINIA, BY PLANNING DISTRICTS: 1970

| Area | Women Aged 16+ | Labor Force Participation Rate | | | Labor Force Participation Rate | | | Labor Force Participation Rate | | | Labor Force Participation Rate | | | Percent Women 16+ With Children 0-5 | |
|-----------------------|----------------|--------------------------------|---------------|--------------------------|--------------------------------|---------------|-----------------------|--------------------------------|---------------|-----------------------|--------------------------------|---------------|-----------------------------|-------------------------------------|--|
| | | Rate | Participation | Number With Children 0-5 | Rate | Participation | Number In Labor Force | Rate | Participation | Number In Labor Force | Rate | Participation | Number Without Children 0-5 | | |
| | | | | | | | | | | | | | | | |
| Lenowisco | 31,538 | 22.9 | | 5,593 | 18.0 | | 1,007 | 24.0 | | 6,228 | | 1.3333 | 25,945 | 17.7 | |
| Cumberland Plateau | 38,626 | 23.3 | | 7,957 | 14.9 | | 1,187 | 25.5 | | 7,829 | | 1.7111 | 30,669 | 20.6 | |
| Mount Rogers | 60,363 | 38.4 | | 10,478 | 39.1 | | 4,094 | 38.3 | | 19,093 | | .9795 | 49,885 | 17.4 | |
| New River Valley | 42,419 | 40.1 | | 8,132 | 36.8 | | 2,995 | 40.9 | | 14,017 | | 1.1100 | 34,287 | 19.2 | |
| Fifth | 88,301 | 41.4 | | 15,291 | 33.2 | | 5,081 | 43.1 | | 31,484 | | 1.2976 | 73,010 | 17.3 | |
| Central Shenandoah | 70,510 | 43.1 | | 12,163 | 40.3 | | 4,903 | 43.6 | | 25,461 | | 1.0826 | 58,347 | 17.3 | |
| Lord Fairfax | 39,466 | 42.0 | | 7,031 | 38.5 | | 2,707 | 42.8 | | 13,882 | | 1.1117 | 32,435 | 17.8 | |
| Northern Virginia | 322,913 | 47.4 | | 70,088 | 29.4 | | 20,570 | 52.4 | | 132,536 | | 1.7860 | 252,825 | 21.7 | |
| Rappahannock-Rapidan | 25,072 | 38.8 | | 4,721 | 33.7 | | 1,589 | 40.0 | | 8,147 | | 1.1892 | 20,351 | 18.8 | |
| Thomas Jefferson | 40,471 | 44.6 | | 7,608 | 40.4 | | 3,072 | 45.6 | | 14,985 | | 1.1293 | 32,863 | 18.8 | |
| Central Virginia | 62,077 | 43.8 | | 10,837 | 42.1 | | 4,561 | 44.1 | | 22,616 | | 1.0487 | 51,240 | 17.5 | |
| West Piedmont | 79,130 | 46.6 | | 14,947 | 48.7 | | 7,281 | 46.2 | | 29,619 | | .9474 | 64,183 | 18.9 | |
| Southside | 29,284 | 40.4 | | 5,099 | 46.0 | | 2,345 | 39.2 | | 9,481 | | .8523 | 24,185 | 17.4 | |
| Piedmont | 27,891 | 38.3 | | 4,629 | 45.2 | | 2,093 | 36.9 | | 8,580 | | .8157 | 23,262 | 16.6 | |
| Richmond Regional | 207,335 | 47.0 | | 36,612 | 38.0 | | 13,914 | 48.9 | | 83,544 | | 1.2879 | 170,723 | 17.7 | |
| Radco | 27,563 | 38.4 | | 5,536 | 34.1 | | 1,887 | 39.5 | | 8,701 | | 1.1587 | 22,027 | 20.1 | |
| Northern Neck | 13,373 | 37.8 | | 1,843 | 42.8 | | 789 | 37.0 | | 4,263 | | .8636 | 11,530 | 13.8 | |
| Middle Peninsula | 17,430 | 35.7 | | 2,847 | 32.0 | | 911 | 36.5 | | 5,318 | | 1.1397 | 14,583 | 16.3 | |
| Crater | 53,732 | 41.3 | | 10,838 | 3.5 | | 4,280 | 41.8 | | 17,920 | | 1.0580 | 42,894 | 20.2 | |
| Southeastern Virginia | 253,957 | 38.5 | | 53,773 | 26.7 | | 15,405 | 41.1 | | 82,364 | | 1.4360 | 200,184 | 21.1 | |
| Peninsula | 106,353 | 40.7 | | 23,599 | 30.0 | | 7,085 | 43.8 | | 36,230 | | 1.4584 | 82,754 | 22.2 | |
| Accomack-Norhampton | 16,638 | 42.7 | | 2,364 | 46.6 | | 1,102 | 33.3 | | 4,747 | | .7134 | 14,274 | 14.2 | |
| Sta. | 1,654,442 | 42.1 | | 321,986 | 33.8 | | 108,858 | 44.2 | | 588,346 | | 1.3061 | 1,332,456 | 19.5 | |

TABLE 11. TRUE LABOR FORCE PARTICIPATION RATES, VIRGINIA, BY PLANNING DISTRICTS: 1970

| Area | Total Population Aged 16+ (1) | Number In Military Service (2) | Number In College (3) | Number Aged 65 and Over (4) | One-half of Women With Children Under Six (5) | Potential Labor Force Members (1-[2+3+ 4+5]) (6) | Civilian Labor Force (7) | True Labor- Force Participation Rate [7÷6] (8) |
|-----------------------|--|---|-----------------------------|--------------------------------------|--|--|-----------------------------------|--|
| Lenowisco | 59,758 | 43 | 783 | 9,843 | 2,797 | 46,292 | 24,975 | 53.95 |
| Cumberland Plateau | 75,311 | 26 | 1,416 | 9,225 | 3,979 | 60,665 | 32,527 | 53.62 |
| Mount Rogers | 114,420 | 51 | 2,908 | 17,643 | 5,239 | 88,579 | 61,417 | 69.34 |
| New River Valley | 83,948 | 100 | 12,477 | 9,483 | 4,066 | 57,822 | 45,535 | 78.75 |
| Fifth | 165,331 | 156 | 5,078 | 24,836 | 7,646 | 127,615 | 95,737 | 75.02 |
| Central Shenandoah | 133,743 | 149 | 8,826 | 18,219 | 6,082 | 100,467 | 77,875 | 77.51 |
| Lord Fairfax | 75,366 | 49 | 1,123 | 11,724 | 3,516 | 58,954 | 44,231 | 75.03 |
| Northern Virginia | 627,003 | 49,110 | 26,797 | 42,615 | 35,044 | 473,437 | 367,073 | 77.53 |
| Rappahannock-Rapidan | 49,218 | 701 | 276 | 8,025 | 2,361 | 37,855 | 28,005 | 73.98 |
| Thomas Jefferson | 81,987 | 192 | 8,506 | 11,328 | 3,804 | 58,157 | 46,124 | 79.31 |
| Central Virginia | 116,655 | 211 | 4,595 | 17,015 | 5,419 | 89,415 | 68,309 | 76.40 |
| West Piedmont | 150,665 | 39 | 3,982 | 19,134 | 7,474 | 120,036 | 92,680 | 77.21 |
| Southside | 56,151 | 15 | 701 | 8,352 | 2,550 | 44,533 | 30,909 | 69.41 |
| Piedmont | 52,910 | 200 | 2,347 | 9,186 | 2,315 | 38,862 | 27,985 | 72.01 |
| Richmond Regional | 385,627 | 972 | 20,610 | 47,797 | 18,306 | 298,032 | 235,144 | 78.90 |
| Radco | 53,220 | 2,510 | 2,690 | 6,477 | 2,768 | 38,775 | 28,558 | 73.65 |
| Northern Neck | 25,588 | 30 | 80 | 5,235 | 922 | 19,321 | 13,284 | 68.75 |
| Middle Peninsula | 33,694 | 77 | 418 | 6,361 | 1,424 | 25,414 | 18,048 | 71.02 |
| Crater | 111,257 | 11,887 | 2,060 | 12,558 | 5,419 | 79,333 | 55,493 | 69.95 |
| Southeastern Virginia | 529,684 | 82,846 | 15,381 | 49,049 | 26,887 | 355,521 | 246,337 | 69.29 |
| Peninsula | 217,049 | 26,045 | 11,424 | 16,928 | 11,800 | 150,849 | 109,350 | 72.49 |
| Accomack-Norhampton | 30,819 | 210 | 170 | 6,549 | 1,182 | 22,708 | 17,144 | 75.50 |
| State | 3,229,401 | 175,629 | 132,659 | 367,492 | 160,993 | 2,392,628 | 1,766,740 | 73.84 |

FIGURE 3. RATE OF UNEMPLOYMENT AMONG THE CIVILIAN LABOR FORCE,
VIRGINIA PLANNING DISTRICTS: 1970



aged 16 and over were unemployed as of April 1, 1970. As has been the case in recent years, the rate of unemployment was significantly higher among females (4.0%) than among males (2.3%). Part of the reason for this difference may have been the fact that females tend to move in and out of the labor force more frequently than males. Consequently, there were relatively more females newly entering the labor market and still in search of employment.

Areal differentials show that some portions of the State experienced much higher unemployment than others. In 1970 the Accomack-Northampton Planning District (no. 22) had by far the highest rate of unemployment in the state, 8.4%. This was primarily due to the very high rate of unemployment among females in this area, 13.7%. This rate was nearly

twice as high as the next greatest incidence of female unemployment, 7.1% in the Northern Neck Planning District (no. 17). Even so, the rate of unemployment among males in Planning District 22, 4.7% was second only to the rate observed among males in Planning District 17 (5.2%). As might be anticipated from this discussion, Planning District 17 had the second highest incidence of unemployment in 1970, 6.0%. Unemployment also was relatively high in the four planning districts in the southwestern portion of the State (Districts 1, 2, 3, and 4, with observed rates of 4.5%, 4.4%, 4.1% and 4.0%), in the Southside and Piedmont areas (Districts 13 and 14, with 3.9 and 3.7%), and in the Hampton Roads area (Districts 20 and 21 with 3.9 and 3.6%). These data are summarized in Table 9 and Figure 3.

Chapter V.

Occupational and Industrial Composition of the Labor Force

The occupational composition states what sort of work the individual does, while the industrial composition shows what sort of product or service is produced by firms employing members of the labor force.

These variables tend to be extremely important for social science analysis. As Alba Edwards noted in 1940: "More than anything else, perhaps, a man's occupation determines his cause and his contribution in life. . . . Indeed, there is no other single characteristic that tells so much about a man and his status--social, intellectual, and economic--as does his occupation."* This is principally true due to the high correlation between income and occupational status.

A. Occupational Composition

The 1970 Census of Population furnished detailed information regarding the occupational composition of the labor force. To facilitate this analysis, the large number of occupational categories was collapsed into four groups: white collar, blue collar, agriculture, and service. A complete listing of the component occupations of these four groups is provided in Table 12. This table also shows the number of Virginians employed in these groups as of April 1, 1970.

For the State 48.9% of all employed Virginians over the age of fifteen were engaged in white collar occupation in 1970. As expected, the percentage was considerably higher among females (61.2%) than among males (41.1%).

Data on the occupational composition of an area's labor force tell a great deal about the economy of an area. An area specializing in trade and services tends to have a high proportion of white collar workers, an area specializing in manufacturing tends to have a high proportion of blue collar workers, and an area specializing in agriculture tends to have a high proportion of agricultural workers.

The data presented in Table 13 show that white collar employment was noticeably high in metropolitan areas, particularly in the Northern Virginia, Richmond, and Newport News-Hampton areas where it accounted for more than half of total employment. In two other planning districts essentially metropolitan in character (Fifth and Southeastern Virginia), it accounted for nearly half of the total. This was to be expected since metropolitan areas almost always serve as trade and financial centers. The only nonmetropolitan area where the proportion of white collar employment was large was the Thomas Jefferson Planning District (no. 10). Since the city of Charlottesville is the center of a relatively large trading area and is the location of a large university, this result was not especially surprising.

Blue collar employment accounted for more than half of all employment in four planning districts (Lenowisco, Cumberland Plateau, Mount Rogers, and West Piedmont) and was the largest single group in all districts except the six mentioned in the previous paragraph. Areas with particularly heavy concentrations of blue collar employment were typified by a high concentration of manufacturing (for example, Planning District 12 comprising the Danville-Martinsville area) or extractive industries, particularly mining (notably Planning Districts 1, 2, and 3 in Southwest Virginia).

Virginia, like most of the rest of the United States, has seen a considerable decline in the number of farmers and farm workers over the past several decades. In 1970 only 46,167 persons, or 2.7% of the employed labor force over 15 years of age was engaged in agricultural occupations. The extent of the decline in agricultural employ-

*Alba M. Edwards, "Preface" to Comparative Occupational Statistics for the United States: 1870 to 1940. (Washington: 1940), p. xi, quoted in Donald J. Bogue, Principles of Demography (New York: 1969), p. 252.

TABLE 12. DETAILED COMPOSITION OF THE OCCUPATIONAL DISTRIBUTION
OF VIRGINIA'S LABOR FORCE: 1970

| Category | Employment in 1970 (Persons 16 Years of Age and Over) |
|---|---|
| White Collar | 839,597 |
| Professional | 274,778 |
| Engineers | 29,754 |
| Physicians, Dentists, and other Practitioners | 10,072 |
| Other Health Workers | 25,366 |
| Teachers (Elementary and Secondary) | 57,417 |
| Technicians (Non-Health) | 25,602 |
| Other Professionals | 126,567 |
| Managers and Administrators (Nonfarm) | 146,148 |
| Salaried | 123,802 |
| Manufacturing | 13,794 |
| Retail Trade | 27,925 |
| Other Industries | 82,083 |
| Self-Employed | 22,346 |
| Retail Trade | 12,346 |
| Other Industries | 10,000 |
| Sales Workers | 111,564 |
| Manufacturing and Wholesale Trade | 21,433 |
| Retail Trade | 65,911 |
| Other Industries | 24,220 |
| Clerical and Kindred Workers | 307,107 |
| Bookkeepers | 29,904 |
| Secretaries, Stenographers, Typists | 98,332 |
| Other Clerical Workers | 178,871 |
| Blue Collar | 621,245 |
| Craftsmen, Foremen, and Kindred Workers | 244,240 |
| Automobile Mechanics | 20,218 |
| Other Mechanics | 35,538 |
| Machinists | 7,907 |
| Other Metal Craftsmen | 10,714 |
| Carpenters | 23,150 |
| Construction Craftsmen, except Carpenters | 53,200 |
| Other Craftsmen | 93,513 |
| Operatives, except Transport | 224,758 |
| Durable Goods Manufacturing | 58,261 |
| Nondurable Goods Manufacturing | 109,069 |
| Nonmanufacturing Industries | 57,428 |
| Transport Equipment Operatives | 69,586 |
| Truck Drivers | 32,076 |
| Other Transport Equipment Operatives | 37,510 |
| Laborers, except Farm | 82,661 |
| Construction Laborers | 18,414 |
| Freight, Stock, and Material Handlers | 27,415 |
| Other Non-farm Laborers | 36,832 |
| Agriculture | 46,167 |
| Farmers and Farm Managers | 25,362 |
| Farm Laborers and Farm Foremen | 20,805 |
| Service | 207,241 |
| Service Workers, except Private Household | 169,049 |
| Cleaning Service Workers | 37,307 |
| Food Service Workers | 51,807 |
| Health Service Workers | 23,596 |
| Personal Service Workers | 24,100 |
| Protective Service Workers | 20,738 |
| Private Household Workers | 38,192 |
| Total | 1,714,250 |

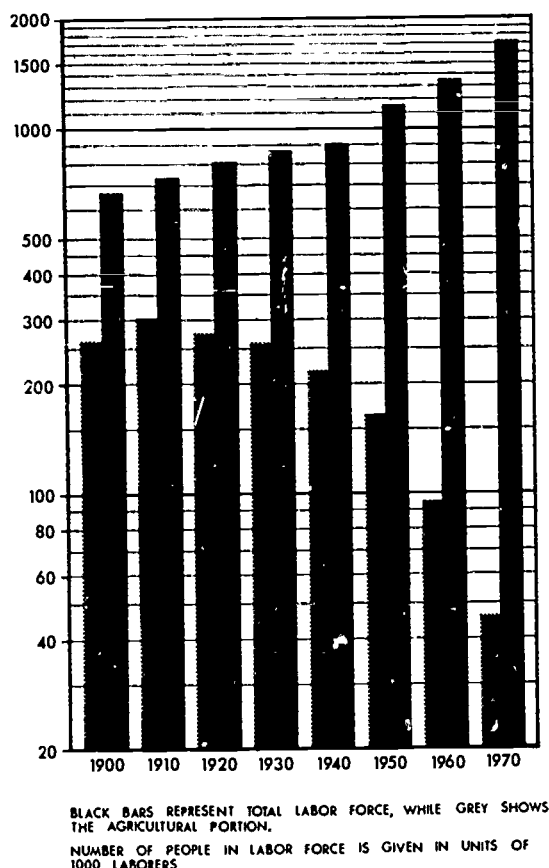
TABLE 13. OCCUPATIONAL DISTRIBUTION OF EMPLOYED CIVILIAN LABOR
FORCE, BY SEX, VIRGINIA, BY PLANNING DISTRICTS: 1970

| Area | Percent White Collar | Percent Blue Collar | Percent Agriculture | Percent Service |
|----------------------|----------------------------|---------------------------|------------------------|--------------------|
| Lenowisco | | | | |
| Male | 23.9 | 62.8 | 8.0 | 5.3 |
| Female | 51.5 | 20.3 | 1.5 | 26.7 |
| Total | 31.7 | 50.6 | 6.1 | 11.5 |
| Cumberland Plateau | | | | |
| Male | 21.1 | 69.4 | 6.0 | 3.5 |
| Female | 53.8 | 27.0 | 0.4 | 18.9 |
| Total | 30.0 | 57.8 | 4.5 | 7.7 |
| Mount Rogers | | | | |
| Male | 25.5 | 59.3 | 9.2 | 6.1 |
| Female | 38.8 | 43.3 | 1.0 | 16.8 |
| Total | 30.4 | 53.2 | 6.2 | 10.2 |
| New River Valley | | | | |
| Male | 32.8 | 54.7 | 4.4 | 8.2 |
| Female | 44.5 | 34.3 | 0.6 | 20.8 |
| Total | 37.0 | 47.1 | 3.0 | 12.8 |
| Fifth | | | | |
| Male | 40.1 | 51.5 | 1.4 | 7.0 |
| Female | 59.9 | 19.3 | 0.2 | 20.6 |
| Total | 47.6 | 39.3 | 1.0 | 12.1 |
| Central Shenandoah | | | | |
| Male | 32.2 | 52.6 | 7.9 | 7.4 |
| Female | 46.6 | 29.6 | 0.8 | 22.9 |
| Total | 37.8 | 43.8 | 5.1 | 13.4 |
| Lord Fairfax | | | | |
| Male | 29.0 | 58.1 | 7.4 | 5.6 |
| Female | 44.8 | 33.1 | 1.0 | 21.2 |
| Total | 34.9 | 48.8 | 5.0 | 11.3 |
| Northern Virginia | | | | |
| Male | 65.4 | 26.8 | 0.9 | 6.9 |
| Female | 82.5 | 4.4 | 0.1 | 13.1 |
| Total | 72.6 | 17.4 | 0.6 | 9.5 |
| Rappahannock-Rapidan | | | | |
| Male | 26.7 | 51.4 | 15.5 | 6.3 |
| Female | 46.0 | 21.8 | 1.7 | 30.6 |
| Total | 33.5 | 41.2 | 10.7 | 14.7 |
| Thomas Jefferson | | | | |
| Male | 39.3 | 46.5 | 5.9 | 8.3 |
| Female | 58.7 | 19.8 | 0.6 | 21.0 |
| Total | 47.0 | 36.0 | 3.8 | 13.3 |
| Central Virginia | | | | |
| Male | 34.0 | 55.2 | 4.7 | 6.2 |
| Female | 48.3 | 29.3 | 0.5 | 21.9 |
| Total | 39.6 | 45.0 | 3.0 | 12.4 |
| West Piedmont | | | | |
| Male | 24.6 | 62.9 | 7.1 | 5.4 |
| Female | 38.1 | 45.5 | 0.7 | 15.7 |
| Total | 29.8 | 56.1 | 4.6 | 9.4 |
| Southside | | | | |
| Male | 25.0 | 55.0 | 16.2 | 3.9 |
| Female | 39.0 | 38.4 | 1.8 | 20.9 |
| Total | 30.2 | 48.8 | 10.8 | 10.3 |
| Piedmont | | | | |
| Male | 22.4 | 56.6 | 15.4 | 4.7 |
| Female | 40.2 | 34.7 | 1.6 | 23.6 |
| Total | 29.1 | 48.4 | 10.8 | 11.8 |
| Richmond Regional | | | | |
| Male | 45.8 | 45.3 | 1.3 | 7.6 |
| Female | 65.7 | 34.3 | 0.3 | 19.7 |
| Total | 54.0 | 32.6 | 0.9 | 12.6 |

TABLE 13. OCCUPATIONAL DISTRIBUTION OF EMPLOYED CIVILIAN LABOR
FORCE, BY SEX, VIRGINIA, BY PLANNING DISTRICTS: 1970
(Continued)

| Area | Percent White Collar | Percent Blue Collar | Percent Agriculture | Percent Service |
|-----------------------|----------------------------|---------------------------|------------------------|--------------------|
| Radco | | | | |
| Male | 32.8 | 56.7 | 3.5 | 7.0 |
| Female | 55.6 | 18.9 | 0.5 | 25.0 |
| Total | 41.3 | 42.9 | 2.4 | 13.5 |
| Northern Neck | | | | |
| Male | 26.5 | 57.3 | 10.7 | 5.5 |
| Female | 42.9 | 34.5 | 1.6 | 21.0 |
| Total | 32.6 | 48.7 | 7.3 | 11.3 |
| Middle Peninsula | | | | |
| Male | 28.1 | 60.8 | 6.0 | 5.1 |
| Female | 51.5 | 17.7 | 2.6 | 28.2 |
| Total | 36.0 | 46.2 | 4.9 | 12.9 |
| Crater | | | | |
| Male | 31.4 | 54.8 | 5.7 | 8.2 |
| Female | 50.7 | 21.4 | 0.4 | 27.5 |
| Total | 38.9 | 41.7 | 3.6 | 15.8 |
| Southeastern Virginia | | | | |
| Male | 38.3 | 51.1 | 2.3 | 8.3 |
| Female | 63.6 | 11.7 | 0.4 | 24.4 |
| Total | 48.1 | 35.8 | 1.5 | 14.6 |
| Peninsula | | | | |
| Male | 42.6 | 47.6 | 0.7 | 9.1 |
| Female | 65.1 | 10.6 | 0.1 | 24.3 |
| Total | 51.4 | 33.1 | 0.5 | 15.0 |
| Accomack-Northampton | | | | |
| Male | 26.0 | 51.8 | 15.9 | 6.3 |
| Female | 36.9 | 32.6 | 8.3 | 22.2 |
| Total | 30.3 | 44.3 | 13.0 | 12.5 |
| State | | | | |
| Male | 41.1 | 47.7 | 4.1 | 7.1 |
| Female | 61.2 | 18.4 | 0.5 | 20.0 |
| Total | 48.9 | 36.3 | 2.7 | 12.1 |

Figure 4. Virginia's Employed Labor Force and Agricultural Labor Force: 1900-1970



ment during the twentieth century is shown in Figure 4.

Throughout the present century the share of the labor force in agriculture has been steadily diminishing. Agricultural employment reached a peak in 1910 when about 305,000 of Virginia's 739,000 employed persons (aged 16 and over) were engaged in agricultural pursuits. In 80 years, Virginia's labor force went from nearly half agricultural (43.7% in 1900) to the minimal proportion of 2.7% recorded in 1970. While the number of employed persons aged 16 and over increased by 183% between 1900 and 1970, the number of persons employed in agriculture declined by 83%.

In Virginia, agriculture accounted for more than 10% of the labor force in only four planning districts: Rappahannock-Rapidan (10.7%), West Piedmont (10.8%), Piedmont (10.8%), and Accomack-Norhampton (13.0%). In most other nonmetropolitan districts, it accounted for about 4 to 6% of the

employed labor force, while in metropolitan districts it was generally around 1% or less. In brief, even in rural areas of the State, it appears that the importance of agriculture as a source of employment is diminishing.

The final occupational category of Virginia's labor force in this analysis is service workers. This category accounted for 12.1% of the State's labor force and does not vary to any considerable extent across the state. A minimum share of 7.7% was recorded in the Cumberland Plateau district, and a maximum of 15.8% was found in Crater district. With the exception of workers in private households, this category is likely to experience continued growth as the economy of the State provides more and more discretionary time and income to Virginia workers.

B. Industrial Composition

The industrial classification of the labor force is predicated in terms of the product or service provided by industries employing the Virginia labor force. The Standard Industrial Classification Code (SICC)* uses ten broad groups to classify industry: agriculture, forestry, and fisheries; mining; contract construction; manufacturing; transportation, communication, electric, gas, and sanitary services; wholesale and retail trade; finance, insurance, and real estate; services; government; and nonclassifiable. In this analysis manufacturing was divided into durable and non-durable goods, and the nonclassifiable category was eliminated. With these two exceptions, the SICC categories were followed. A complete list of these categories and the number of Virginians employed in each industry in 1970 is given in Table 14.

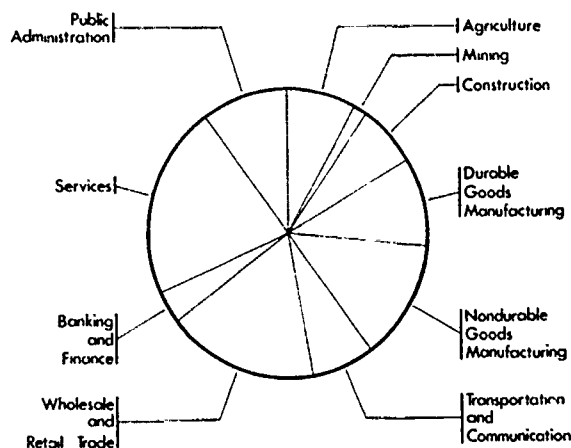
As the table indicates, the bulk of Virginia employment in 1970 was in services (25.4%), manufacturing (22.4%), and trade (18.0%). Other significant concentrations of employment were in public administration (11.4%), construction (7.4%), transportation and communications (6.8%), and financial services (4.4%). As expected, relatively few persons were employed in

*Executive Office of the President, Bureau of the Budget, Standard Industrial Classification Manual (Washington, 1967), pp. v-vii.

TABLE 14. DETAILED COMPOSITION OF THE INDUSTRIAL DISTRIBUTION
OF VIRGINIA'S LABOR FORCE: 1970

| Category | Employment in 1970 (Persons Aged 16 and over) |
|--|---|
| 1. Agriculture, Forestry and Fisheries | 57,262 |
| 2. Mining | 17,067 |
| 3. Construction | 126,803 |
| 4. Durable Goods Manufacturing | 169,044 |
| a. Furniture and Lumber and Wood Products | 44,038 |
| b. Primary Metal Industries | 8,974 |
| c. Fabricated Metal Industries | 16,541 |
| d. Machinery, Except Electrical | 11,521 |
| e. Electrical Machinery, Equipment, Supplies | 26,121 |
| f. Motor Vehicles and Other Transportation Equipment | 38,002 |
| g. Other Durable Goods | 23,847 |
| 5. Nondurable Goods Manufacturing | 215,178 |
| a. Food and Kindred Products | 27,157 |
| b. Textile Mill and Other Fabricated Textile Products | 80,789 |
| c. Printing, Publishing, and Allied Industries | 20,921 |
| d. Chemical and Allied Products | 34,418 |
| e. Other Nondurable Goods | 51,893 |
| 6. Transportation, Communication, Electric, Gas and Sanitary Services | 115,948 |
| a. Railroads and Railway Express Service | 19,059 |
| b. Trucking Service and Warehousing | 22,189 |
| c. Other Transportation | 26,364 |
| d. Communications | 23,935 |
| e. Utilities and Sanitary Services | 24,401 |
| 7. Wholesale and Retail Trade | 307,797 |
| a. Wholesale Trade | 56,768 |
| b. Food, Bakery, and Dairy Stores | 38,596 |
| c. Eating and Drinking Places | 39,112 |
| d. General Merchandise Retailing | 46,455 |
| e. Motor Vehicle Retailing and Service Stations | 39,849 |
| f. Other Retail Trade | 87,017 |
| 8. Finance, Insurance, and Real Estate | 75,420 |
| a. Banking and Credit Agencies | 27,829 |
| b. Insurance, Real Estate, and Other Finance | 47,591 |
| 9. Services | 434,970 |
| a. Business Services | 25,386 |
| b. Repair Services | 19,154 |
| c. Private Households | 37,722 |
| d. Other Personal Services | 53,941 |
| e. Entertainment and Recreation Services | 11,064 |
| f. Hospitals | 54,438 |
| g. Other Health Services | 29,078 |
| h. Elementary and Secondary Schools and Colleges | 127,497 |
| i. Other Education and Kindred Services | 8,004 |
| j. Welfare, Religious, and Non-profit Membership Organizations | 26,642 |
| k. Legal, Engineering, and Miscellaneous Professional Services | 42,044 |
| 10. Public Administration | 194,761 |
| Total | 1,714,250 |

Figure 5A. Industrial Composition of Virginia's Employed Labor Force: 1960



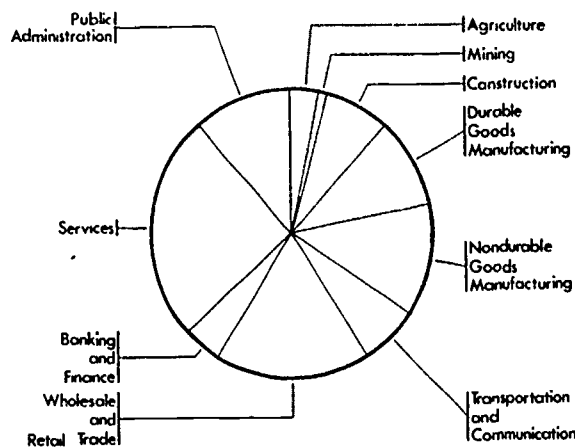
agriculture, forestry, and fisheries (3.3%) or in mining (1.0%).

Comparing this data with comparable data for 1960 (see Figures 5A and 5B), the share of persons employed in services (21.7% in 1960), trade (17.7%), public administration (10.1%), construction (7.0%), and financial services (3.6%) rose during the 1960-1970 decade, while that of agriculture (8.1%), mining (1.5%), manufacturing (23.2%), and transportation and communications (7.2%) diminished.

Overall, employment in Virginia rose by 27.9% in this period. Relatively greater gains occurred in financial services (60.0%), services (54.2%), public administration (49.2%), construction (39.1%), durable goods manufacturing (36.2%), and wholesale and retail trade (34.3%). Relatively smaller gains occurred in transportation and communications (24.4%) and nondurable goods manufacturing (22.4%), while absolute declines were experienced in the agricultural (45.3% decrease) and mining (11.5% decrease) sectors.

Using the ten categories outlined previously, the 1970 industrial composition of the labor force in the twenty-two planning districts is given in Table 15. The data show considerable variability among planning districts in the industrial composition of the labor force. Agriculture, for example, employed almost 18% of the 1970 labor force in the Accomack-Northampton Planning District (no. 22), and more than 10% in the Rappahannock-Rapidan, Southside, Piedmont, and Northern Neck Planning Districts (no. 9, 13, 14, and

Figure 5B. Industrial Composition of Virginia's Employed Labor Force: 1970



17 respectively). On the other hand, in most urban areas of the state between 1 and 2% of the labor force was employed in agricultural industries.

The concentration of mining industries within a couple of planning districts was even more pronounced. Mining employed over 29% of the labor force in the Cumberland Plateau Planning District (no. 2) and almost 15% in Lenowisco Planning District (no. 1). With the exception of Mount Rogers Planning District (no. 3) (1.11%), mining employed less than 1% of the labor force in all other planning districts in 1970.

Few other industries show such pronounced concentration, although, as expected, metropolitan areas tended to have more workers employed in banking and financial services and other services and fewer workers employed in manufacturing than did nonmetropolitan areas.

Another area of pronounced concentration was public administration. Employment in this sector was primarily located in the Northern Virginia Planning District (no. 8), where it accounted for over 28% of employment and, to a lesser extent in the Southeastern Virginia and Peninsula Planning Districts (no. 20 and 21), where it accounted for 12.02 and 14.18% of employment, respectively. All told, these three areas, with 43% of all employment in the State, accounted for nearly three-fourths (74.24%) of employment in the public administration sector. Somewhat surprisingly, Planning District 15, including the state capitol of Richmond, had only 7.48% of its labor force

TABLE 15. INDUSTRIAL COMPOSITION OF VIRGINIA'S LABOR FORCE, BY PLANNING DISTRICT: 1970

| Agriculture, Forestry, and Fisheries | | | | | | | | | | |
|--------------------------------------|-----------|--------|--------------|---------------|------------------|--|----------------------------|--------------------------------|-----------------------|--------|
| Area | Fisheries | Mining | Construction | Durable Goods | Nondurable Goods | Transportation, Communication, Utilities | Wholesale and Retail Trade | Banking and Financial Services | Public Administration | Total |
| Lenowisco | 6.70 | 14.47 | 9.43 | 4.07 | 14.00 | 5.87 | 18.46 | 1.60 | 22.17 | 3.23 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| Cumberland Plateau | 4.85 | 29.06 | 6.82 | 6.38 | 7.52 | 6.55 | 16.99 | 1.79 | 17.28 | 2.75 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| Mount Rogers | 6.64 | 1.11 | 8.29 | 16.52 | 24.33 | 4.41 | 15.39 | 1.92 | 18.65 | 2.75 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| New River Valley | 3.42 | 0.39 | 6.93 | 13.57 | 24.98 | 4.32 | 13.52 | 2.09 | 27.79 | 2.99 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| Fifth | 1.40 | 0.33 | 6.47 | 10.48 | 13.30 | 13.46 | 21.53 | 4.45 | 24.84 | 3.74 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| Central Shenandoah | 6.20 | 0.36 | 7.51 | 12.33 | 21.33 | 4.99 | 16.10 | 2.17 | 26.51 | 2.49 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| Lord Fairfax | 6.02 | 0.48 | 10.84 | 8.78 | 21.95 | 6.44 | 19.56 | 2.67 | 19.54 | 3.71 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| Northern Virginia | 0.96 | 0.14 | 6.27 | 3.49 | 2.94 | 7.06 | 16.24 | 6.28 | 28.45 | 28.17 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| Rappahannock-Rapidan | 12.94 | 0.76 | 14.43 | 10.18 | 8.25 | 5.41 | 15.54 | 3.41 | 23.27 | 5.83 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| Thomas Jefferson | 4.78 | 0.92 | 8.93 | 12.00 | 9.62 | 5.72 | 15.20 | 4.66 | 34.22 | 3.96 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| Central Virginia | 3.39 | 0.33 | 6.92 | 20.99 | 18.77 | 5.15 | 15.33 | 3.47 | 22.91 | 2.74 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| West Piedmont | 4.83 | 0.13 | 6.23 | 17.75 | 31.92 | 4.23 | 13.63 | 2.38 | 16.68 | 2.22 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| Southside | 11.36 | 0.62 | 8.16 | 12.03 | 25.29 | 4.08 | 15.09 | 1.78 | 18.87 | 2.71 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| Piedmont | 11.81 | 0.89 | 8.18 | 13.34 | 16.30 | 6.20 | 14.70 | 1.76 | 22.46 | 4.36 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| Richmond Regional | 1.27 | 0.22 | 7.29 | 6.12 | 15.04 | 7.88 | 20.50 | 7.21 | 26.98 | 7.48 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| Radco | 3.04 | 0.38 | 12.17 | 6.35 | 11.16 | 5.43 | 18.70 | 2.69 | 25.25 | 14.84 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| Northern Neck | 13.00 | 0.17 | 9.60 | 7.64 | 14.36 | 4.87 | 19.57 | 3.00 | 21.89 | 5.90 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| Middle Peninsula | 8.64 | 0.19 | 9.33 | 12.50 | 10.49 | 4.62 | 18.40 | 2.80 | 23.32 | 9.71 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| Crater | 4.05 | 0.31 | 6.56 | 6.78 | 24.37 | 5.06 | 17.33 | 2.39 | 24.34 | 8.80 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| Southeastern Virginia | 2.06 | 0.08 | 7.82 | 11.03 | 6.15 | 7.85 | 22.17 | 4.66 | 26.15 | 12.02 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| Peninsula | 1.01 | 0.04 | 6.25 | 19.36 | 3.96 | 5.79 | 18.05 | 3.45 | 27.92 | 14.18 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| Accomack-Norhampton | 17.95 | 0.12 | 7.18 | 3.01 | 17.79 | 5.70 | 20.22 | 1.84 | 20.32 | 5.86 |
| Percent of Labor Force | | | | | | | | | | 100.00 |
| State | 3.34 | 1.00 | 7.40 | 9.86 | 12.55 | 6.76 | 17.96 | 4.40 | 25.37 | 11.36 |
| Percent of Labor Force | | | | | | | | | | 100.00 |

employed in this sector. (This is due to the relatively low number of federal employees in the area.)

The concentration pattern of employment by industry is contained in the data in Table 16. This table shows a summary of the rank order of each industry in each county. As is seen in the data, highly concentrated industries, such as mining and public administration, were highly ranked in a few counties and ranked near the bottom in many of the rest. Industries that are not highly concentrated tended to have a more or less constant rank in the majority of planning districts. This pattern held in the construction, transportation and communication, wholesale and retail trade, banking, and service sectors.

Another and perhaps more useful way of determining the regional concentration of the labor force in certain industries is through the use of a location quotient. The location quotient for any industry, i , in any planning district, j , ($L_{i,j}$) is the ratio of employment in that sector and in that planning district ($E_{i,j}$) (considered as a percentage of total employment in that planning district (E_j)) to employment in that sector for the entire state ($E_{i,v}$) (considered as a percentage of total employment in the state (E_v)). Mathematically, we may define this as follows:*

$$L_{i,j} = \frac{E_{i,j}/E_j}{E_{i,v}/E_v}$$

Thus, if 10% of the state's labor force is employed in sector i and 15% of the labor force in planning district j is employed in this sector, $L_{i,j}$ would equal 1.5. Location quotients for all industrial groups in all planning districts are given in Table 17.

In evaluating the results of the location quotient analysis, it is important to realize that the data on employment by industrial groups are tabulated on a residence basis; that is, the individual worker is counted in the area where he lives rather than the area where he works. Due to the relatively high level of inter-area commuting (46.7% of Virginia's labor force worked outside the city or county of residence in 1970), the computation of location quotients to determine industrial concentration on a city-county level would be essentially meaningless. However, by grouping cities and counties into planning districts, much of the effect of commuting is removed.

The location quotients given in Table 17 are functions not only of industrial concentration, but of size differentials among planning districts as well. For example, in agriculture, 16 of 22 planning districts had location quotients in excess of 1.0. This means relatively more persons were employed in the agricultural sphere than in the State as a whole. However, five of the six remaining districts are the five largest and most metropolitan districts in the state. As would be expected, agriculture was not a major source of employment. The remaining district (Planning District 16, centering on Fredericksburg) had a quotient of .91. Since this area is located between the suburban portions of two large metropolitan areas (Washington to the north and Richmond to the south), it may be starting to take on the suburban characteristics of its neighbors, as the process of urbanization continues. It is, for example, not uncommon to see subdivisions in Fredericksburg or Stafford County advertised in the real estate pages of Washington newspapers.

Despite the relatively high number of districts with agricultural quotients in excess of unity, the quotients were especially high (greater than 2.0) in seven districts: Lenswico Planning District (no. 1) in Southwest Virginia; the Rappahannock-Rapidan Planning District (no. 9), immediately southwest of the Washington metropolitan area; the Piedmont and Southside districts (no. 13 and 14); the Northern Neck and Middle Peninsula districts (no. 17 and 18); and the Accomack-Northampton district (no. 22).

The most concentrated industry was clearly mining, with extremely high location quotients found in the Lenowisco and Cumberland Plateau Planning Districts (14.47 and 29.06, respectively), a quotient slightly over unity (1.11) in the Mount Rogers Planning District, and quotients less than unity in all other districts. Substantial concentration was also found in the banking sector (five of twenty-two districts with quotients over unity), transportation (four districts with quotients over

*Alternatively, the location quotient may be viewed as any district's share of total state employment in a given sector divided by that district's share of total employment in the state. Mathematically, this would simply be:

$$L_{i,j} = \frac{E_{i,j}/E_{i,v}}{E_j/E_v}$$

TABLE 16. RANK ORDER DISTRIBUTION OF EMPLOYMENT BY INDUSTRIAL CATEGORY, VIRGINIA CITIES AND COUNTIES: 1970

| | Agriculture | Mining | Construction | Durable Goods Manufacturing | Nondurable Goods Manufacturing | Transportation, Communication, Utilities | Wholesale and Retail Trade | Banking and Financial Services | Public Administration | Total |
|-------|-------------|--------|--------------|-----------------------------|--------------------------------|--|----------------------------|--------------------------------|-----------------------|-------|
| 1 | 134 | 4 | 0 | 7 | 38 | 0 | 11 | 0 | 71 | 134 |
| 2 | 6 | 0 | 1 | 19 | 16 | 1 | 44 | 0 | 41 | 134 |
| 3 | 9 | 2 | 8 | 19 | 28 | 5 | 30 | 0 | 18 | 134 |
| 4 | 11 | 1 | 27 | 27 | 14 | 7 | 38 | 3 | 3 | 134 |
| 5 | 17 | 0 | 49½ | 13 | 11 | 24 | 8 | 2 | ½ | 134 |
| 6 | 22½ | 0 | 38½ | 16 | 5 | 30½ | 3 | 7 | ½ | 134 |
| 7 | 9½ | 0 | 5 | 13 | 12 | 46½ | 0 | 20½ | 0 | 134 |
| 8 | 9 | 3 | 5 | 17 | 8 | 18 | 0 | 31½ | 0 | 134 |
| 9 | 43 | 6 | 0 | 3 | 2 | 2 | 0 | 60 | 0 | 134 |
| 10 | 6 | 118 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 134 |
| Total | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 1,340 |

Note: Each cell represents the number of cities and counties in which employment in a specific sector ranks in a specific order among all employing industries. For example, mining is the leading sector in four jurisdictions, is third in two, fourth in one, eighth in three, ninth in six, and tenth in 118.

TABLE 17. LOCATION QUOTIENTS FOR EMPLOYMENT BY INDUSTRIAL CATEGORY, VIRGINIA, BY PLANNING DISTRICT: 1970

| Area | Agriculture | Mining | Construction | Durable Goods Manufacturing | Nondurable Goods Manufacturing | Transportation, Communication, Utilities | Wholesale and Retail Trade | Banking and Financial Services | Public Administration |
|-----------------------|-------------|---------|--------------|-----------------------------|--------------------------------|--|----------------------------|--------------------------------|-----------------------|
| Lenovisco | 2.0061 | 14.4700 | 1.2743 | .4128 | 1.1155 | .8683 | 1.0278 | .3636 | .8739 |
| Cumberland Plateau | 1.4540 | 29.0600 | .9216 | .6471 | .5992 | .9689 | .9460 | .4068 | .6811 |
| Mount Rogers | 1.9877 | 1.1100 | 1.1203 | 1.6755 | 1.9386 | .6524 | .8569 | .4364 | .7351 |
| New River Valley | 1.0225 | .3900 | .9365 | 1.3763 | 1.9904 | .6391 | .7528 | .4750 | .2632 |
| Fifth | .4191 | .3300 | .8743 | 1.0629 | 1.0598 | 1.9911 | 1.1988 | 1.0114 | .9791 |
| Central Shenandoah | 1.8575 | .3600 | 1.0149 | 1.2505 | 1.6996 | .7382 | .8964 | .4932 | .2192 |
| Lord Fairfax | 1.8018 | .4800 | 1.4649 | .8905 | 1.7490 | .9527 | 1.0891 | .6068 | .7702 |
| Northern Virginia | .2875 | 1.4000 | .8473 | .3540 | .2343 | 1.0444 | .9042 | 1.4273 | 1.1214 |
| Rappahannock-Rapidan | 3.8727 | .7600 | 1.9500 | 1.0325 | .6574 | .8003 | .8653 | .7750 | .9172 |
| Thomas Jefferson | 1.4298 | .9200 | 1.2068 | 1.2170 | .7665 | .8462 | .8463 | 1.0591 | 1.3488 |
| Central Virginia | 1.0151 | .3300 | .9351 | 2.1288 | 1.4956 | .7618 | .8536 | .7886 | .3486 |
| West Piedmont | 1.4474 | .8419 | .8319 | 1.8002 | 2.5434 | .6257 | .7589 | .5409 | .9030 |
| Southside | 3.4009 | .6200 | 1.1027 | 1.2201 | 2.0151 | .6036 | .8402 | .4045 | .6575 |
| Piedmont | 3.5342 | .8900 | 1.1054 | 1.3529 | 1.2988 | .9172 | .8185 | .4000 | .7438 |
| Richmond Regional | .3815 | .2200 | .9851 | .6207 | 1.1984 | 1.1657 | 1.1414 | 1.6386 | .8853 |
| Radco | .9102 | .3800 | 1.6446 | .6440 | .8892 | .8033 | 1.0412 | .6114 | .9953 |
| Northern Neck | 3.8913 | .1700 | 1.2973 | .7748 | 1.1442 | .7204 | 1.0896 | .6818 | .8628 |
| Middle Peninsula | 2.5857 | .1900 | 1.2608 | 1.2677 | .8359 | .6834 | 1.0245 | .6364 | .9192 |
| Crater | 1.2126 | .3100 | .8865 | .6876 | 1.9418 | .7485 | .9649 | .5432 | .9594 |
| Southeastern Virginia | .6158 | .0800 | 1.0568 | 1.1187 | 1.9418 | 1.1612 | 1.2344 | 1.0591 | 1.0307 |
| Peninsula | .3018 | .0400 | .8446 | 1.9635 | .3155 | .8565 | 1.0050 | .7841 | 1.0581 |
| Accomack-Norhampton | 5.3739 | .1200 | .9703 | .3053 | 1.4175 | .8432 | 1.1258 | .4182 | .8009 |
| | | | | | | | | | .5158 |

TABLE 18. LEADING AREAS OF RELATIVE CONCENTRATION OF EMPLOYMENT, VIRGINIA PLANNING DISTRICTS: 1970

(Location quotients in parentheses)

| District | 1st Sector | 2nd Sector | 3rd Sector | 4th Sector |
|---------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| Lenowisco (P.D. 1) | Mining (14.47) | Agriculture (2.01) | Construction (1.27) | Nondurable goods manufacturing (1.16) |
| Cumberland Plateau (P.D. 2) | Mining (29.06) | Agriculture (1.45) | Transportation (1.97) | Trade (.95) |
| Mount Rogers (P.D. 3) | Agriculture (1.99) | Nondurable goods manufacturing (1.94) | Durable goods manufacturing (1.68) | Construction (1.12) |
| New River Valley (P.D. 4) | Nondurable goods manufacturing (1.99) | Durable goods manufacturing (1.38) | Services (1.10) | Agriculture (1.02) |
| Fifth (P.D. 5) | Transportation (1.99) | Trade (1.20) | Durable goods manufacturing (1.06) | Nondurable goods manufacturing (1.06) |
| Central Shenandoah (P.D. 6) | Agriculture (1.86) | Nondurable goods manufacturing (1.70) | Durable goods manufacturing (1.25) | Services (1.04) |
| Lord Fairfax (P.D. 7) | Agriculture (1.80) | Nondurable goods manufacturing (1.75) | Construction (1.46) | Trade (1.09) |
| Northern Virginia (P.D. 8) | Public administration (2.48) | Banking (1.43) | Services (1.12) | Transportation (1.04) |
| Rappahannock-Rapidan (P.D. 9) | Agriculture (3.87) | Construction (1.95) | Durable goods manufacturing (1.03) | Services (.92) |
| Thomas Jefferson (P.D. 10) | Agriculture (1.43) | Services (1.35) | Durable goods manufacturing (1.22) | Construction (1.21) |
| Central Virginia (P.D. 11) | Durable goods manufacturing (2.13) | Nondurable goods manufacturing (1.50) | Agriculture (1.02) | Construction (.94) |
| West Piedmont (P.D. 12) | Nondurable goods manufacturing (2.54) | Durable goods manufacturing (1.80) | Agriculture (1.45) | Construction (.84) |
| Southside (P.D. 13) | Agriculture (3.40) | Nondurable goods manufacturing (2.02) | Durable goods manufacturing (1.22) | Construction (1.10) |
| Piedmont (P.D. 14) | Agriculture (3.53) | Durable goods manufacturing (1.35) | Nondurable goods manufacturing (1.30) | Construction (1.11) |
| Richmond Regional (P.D. 15) | Banking (1.64) | Nondurable goods manufacturing (1.20) | Transportation (1.17) | Trade (1.14) |
| Radco (P.D. 16) | Construction (1.64) | Public administration (1.31) | Trade (1.04) | Service (1.00) |
| Northern Neck (P.D. 17) | Agriculture (3.89) | Construction (1.30) | Nondurable goods manufacturing (1.14) | Trade (1.09) |
| Middle Peninsula (P.D. 18) | Agriculture (2.59) | Durable goods manufacturing (1.27) | Construction (1.26) | Trade (1.02) |
| Crater (P.D. 19) | Nondurable goods manufacturing (1.94) | Agriculture (1.21) | Trade (.96) | Services (.96) |
| Southeastern Virginia (P.D. 20) | Trade (1.23) | Transportation (1.16) | Durable goods manufacturing (1.12) | Building (1.06) |
| Peninsula (P.D. 21) | Durable goods manufacturing (1.96) | Public administration (1.25) | Services (1.10) | Trade (1.01) |
| Accomack-Norhampton (P.D. 22) | Agriculture (5.37) | Nondurable goods manufacturing (1.42) | Trade (1.13) | Construction (.97) |

unity), and public administration (four districts with quotients over unity).

In order to give some indication of the differing industrial composition of Virginia planning districts, Table 18 shows the four most significant sectors (in terms of location coefficient) for each planning district. The purpose of this table is to show how different the concentration patterns of industry throughout the State are. For example, Northern Virginia, with its concentrations of public administration, banking and financial services, other services,

and transportation is obviously quite different from areas with concentration in agriculture, manufacturing, and construction.

The data in Table 18 are also useful in evaluating those areas which are heavily dependent upon one or two industries for employment. The most obvious example is the Cumberland Plateau Planning District, which was characterized by an extraordinarily high location quotient for mining, a moderately high quotient for agriculture, and relatively low quotients (less than unity) for other industries.

Chapter VI.

Income

Three aspects of income are considered in this chapter: the mean level of family income, the incidence of poverty, and the distribution of income.

A. Mean Family Income

Mean family income is the arithmetic average of the reported level of income (in 1969) for all families in an area under study. Data for all 22 planning districts are presented in Table 19. The data show a substantial amount of variation, ranging from a low of \$6,302 in extreme Southwest Virginia to a high of \$15,347 in Northern Virginia. Once again, the latter area is most atypical of the balance of the State. The mean level of family income in Northern Virginia was nearly \$4,000 higher than in the second-place district, the Richmond Regional Planning District (no. 15). These two districts and the

Peninsula district (no. 21) were the only ones in the State with mean income above that recorded for the State as a whole.

As expected, the urbanized and metropolitan areas had somewhat higher levels of mean family income than did rural areas. In addition to the areas mentioned above, the areas around Roanoke (Planning District 5), Harrisonburg-Staunton-Waynesboro (Planning District 6), Charlottesville (Planning District 10), Lynchburg (Planning District 11), Fredericksburg (Planning District 16), Petersburg-Hopewell-Colonial Heights (Planning District 19), and Norfolk-Virginia Beach-Portsmouth (Planning District 20) all had mean family income levels of \$9,000 or greater. Additionally, the Radford-Montgomery County area (Planning District 4) was close to this level (\$8,904). Relatively low levels of income were found in the Southwestern (Planning Districts 1, 2, 3), Southside

FIGURE 6. MEAN FAMILY INCOME FOR PLANNING DISTRICTS: 1970

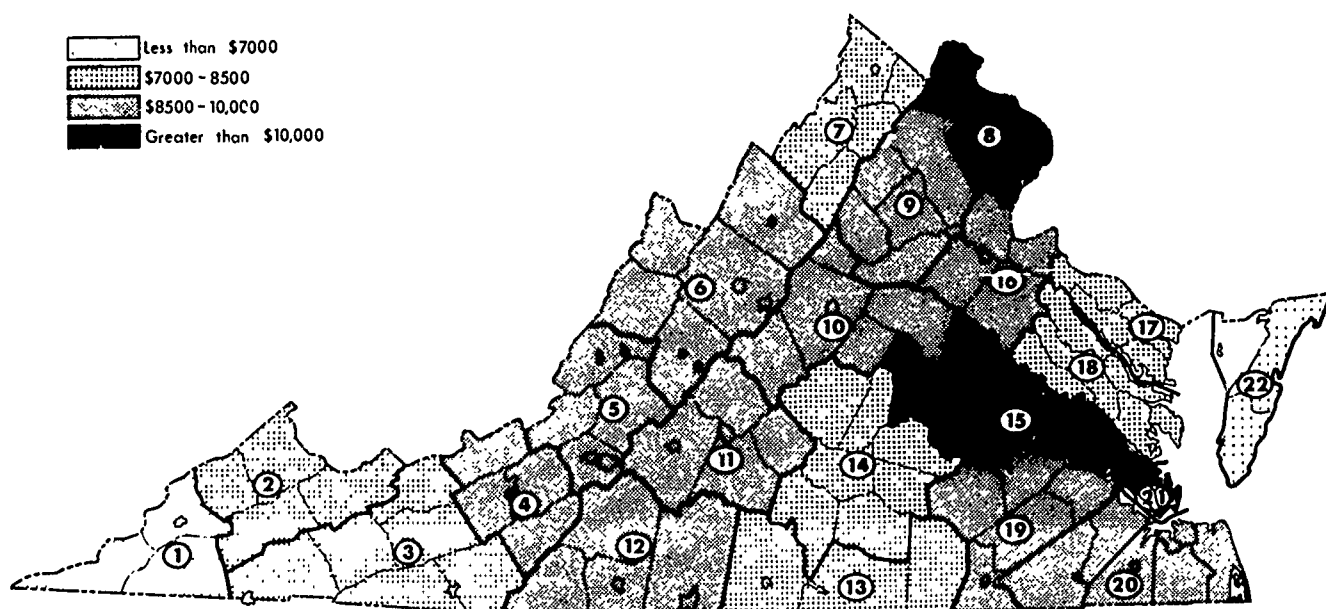


TABLE 19. MEAN FAMILY INCOME AND INCIDENCE OF POVERTY, VIRGINIA, BY PLANNING DISTRICT: 1970

| Area | Number of Families | Mean Income | Number of Poor Families | Mean Income of Poor Families | Percent of Families in Poverty | Number of Poor Persons | Percent of Population in Poverty | Deficit/Income Ratio of Poor Families | Mean Income as a Percent of State Total |
|-----------------------|--------------------|-------------|-------------------------|------------------------------|--------------------------------|------------------------|----------------------------------|---------------------------------------|---|
| Lenowisco | | | | | | | | | |
| Planning District 1 | 22,647 | \$ 6,302 | 6,743 | \$1,906 | 29.77 | 28,655 | 33.85 | .7754 | .5963 |
| Cumberland Plateau | | | | | | | | | |
| Planning District 2 | 28,637 | 7,020 | 7,356 | 2,106 | 25.69 | 32,717 | 29.08 | .7194 | .6643 |
| Mount Rogers | | | | | | | | | |
| Planning District 3 | 42,299 | 7,398 | 7,572 | 2,006 | 17.90 | 32,579 | 20.44 | .6560 | .7000 |
| New River Valley | | | | | | | | | |
| Planning District 4 | 28,763 | 8,904 | 3,577 | 1,972 | 12.44 | 16,037 | 13.97 | .6324 | .8425 |
| Fifth | | | | | | | | | |
| Planning District 5 | 61,607 | 9,894 | 5,825 | 2,082 | 9.46 | 27,616 | 11.95 | .6210 | .9362 |
| Central Shenandoah | | | | | | | | | |
| Planning District 6 | 46,916 | 9,116 | 5,400 | 2,093 | 11.51 | 25,622 | 13.75 | .6197 | .8626 |
| Lord Fairfax | | | | | | | | | |
| Planning District 7 | 28,408 | 8,288 | 3,656 | 2,058 | 12.87 | 16,536 | 15.55 | .6195 | .7843 |
| Northern Virginia | | | | | | | | | |
| Planning District 8 | 231,308 | 15,347 | 10,120 | 1,696 | 4.38 | 50,006 | 5.43 | 1.0466 | 1.4522 |
| Rappahannock-Rapidan | | | | | | | | | |
| Planning District 9 | 18,192 | 8,773 | 3,412 | 2,197 | 18.76 | 16,480 | 22.82 | .6755 | .8301 |
| Thomas Jefferson | | | | | | | | | |
| Planning District 10 | 28,032 | 9,518 | 4,496 | 2,131 | 16.04 | 23,884 | 20.73 | .6847 | .9006 |
| Central Virginia | | | | | | | | | |
| Planning District 11 | 41,825 | 9,411 | 4,999 | 2,173 | 11.95 | 24,778 | 14.93 | .6328 | .8905 |
| West Piedmont | | | | | | | | | |
| Planning District 12 | 56,556 | 8,531 | 8,034 | 2,203 | 14.21 | 38,645 | 17.66 | .6210 | .8072 |
| Southside | | | | | | | | | |
| Planning District 13 | 20,710 | 7,179 | 5,057 | 2,193 | 24.42 | 25,230 | 30.56 | .6817 | .6793 |
| Piedmont | | | | | | | | | |
| Planning District 14 | 18,395 | 7,418 | 4,493 | 2,151 | 24.43 | 22,121 | 29.01 | .7076 | .7019 |
| Richmond Regional | | | | | | | | | |
| Planning District 15 | 139,318 | 11,362 | 13,154 | 2,126 | 9.44 | 68,504 | 12.51 | .7262 | 1.0751 |
| Radco | | | | | | | | | |
| Planning District 16 | 18,950 | 9,461 | 2,365 | 2,137 | 12.48 | 11,256 | 14.54 | .6579 | .8952 |
| Northern Neck | | | | | | | | | |
| Planning District 17 | 9,704 | 7,390 | 2,399 | 2,078 | 24.72 | 11,540 | 31.88 | .7204 | .6993 |
| Middle Peninsula | | | | | | | | | |
| Planning District 18 | 12,428 | 8,463 | 2,256 | 2,164 | 18.15 | 10,138 | 21.29 | .7149 | .8008 |
| Crater | | | | | | | | | |
| Planning District 19 | 37,218 | 9,216 | 5,346 | 2,178 | 14.36 | 27,600 | 17.14 | .7452 | .8721 |
| Southeastern Virginia | | | | | | | | | |
| Planning District 20 | 181,748 | 9,703 | 25,950 | 1,908 | 14.28 | 126,650 | 16.46 | .9403 | .9181 |
| Peninsula | | | | | | | | | |
| Planning District 21 | 77,346 | 10,721 | 7,817 | 1,897 | 10.11 | 37,703 | 11.82 | .9362 | 1.0145 |
| Accomack-Norhampton | | | | | | | | | |
| Planning District 22 | 11,249 | 6,386 | 3,044 | 1,888 | 27.06 | 14,680 | 33.79 | .8453 | .6043 |
| Total | 1,116,256 | \$10,568 | 143,005 | \$2,025 | 12.30 | 690,615 | 14.86 | .7644 | 1.0000 |

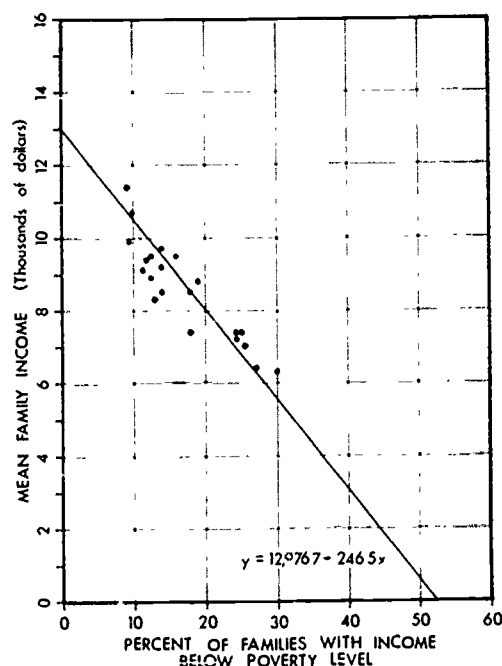
(Planning Districts 13 and 14), Upper Peninsula (Planning Districts 17 and 18) and Eastern Shore (Planning District 22) areas. The level of mean family income for all planning districts is shown in graphic form in Figure 6.

Level of mean income does not take into account areal differences in the cost of living. Thus, mean family income in Northern Virginia was \$9,000 higher than in extreme Southwestern Virginia, but this does not necessarily mean that the purchasing power of Northern Virginia families exceeded that of Southwest Virginia families by this amount. Regrettably, there are no comparable indices which show the relative cost of living in these two (or any other) areas.*

B. Incidence of Poverty

Data on the incidence of poverty correct this data deficiency to a limited extent. The incidence of poverty tells how many families received a level of income which was less than the appropriate criteria as developed by the Social Security Administration. The data on the incidence of poverty for females and individuals (also in Table 19) show that, in general, the lower the level of mean family income, the higher the percentage of families in poverty. As Figure 7

Figure 7. Statistical Relationship Between Mean Family Income and Percent of Families with Income Below the Poverty Level



shows, the relationship between the two variables was quite high. The simple coefficient of correlation (a measure of the association of two variables) was a relatively high $-.859$. (The negative sign indicates that the variables tend to move in the opposite direction.) Consequently, districts with low levels of income tended to have the highest incidence of poverty among families and individuals. In six of the 22 planning districts (Lenowisco, Cumberland Plateau, Southside, Piedmont, Northern Neck, and Accomack-Northampton), about one-fourth of all families were classified as receiving a level of income below the poverty criterion.

The data in Table 19 also show the mean income deficit of families below the poverty level of income. This figure represents the average amount that each poor family would require to move beyond the poverty level. The table also shows this number expressed as a percentage of the mean income of poverty families. The purpose of this ratio is to show the relative amount of increased income required, on the average, to remove all families from the poverty classification.

These two sets of data provide some interesting contrasts to the data on mean family income and incidence of poverty. The Northern Virginia area which had by far the highest mean family income and lowest incidence of poor families, also showed the lowest mean income for families below the poverty level (\$1,696) and the highest ratio of mean deficit to mean family income for poor families (1.05). In other words, in order to raise all poor families in Northern Virginia above the poverty level, their average income would have to increase by more than 100% (from \$1,696 to \$3,471). Other relatively high income areas which would also require large increases in average income include both planning districts in the Tidewater area. These districts ranked third (Peninsula Planning District) and fifth (Southeastern Virginia Planning District) in terms of mean family income and third and second, respectively, in terms of the relative income increase required to remove all families from poverty (the ratios are .936 and .940, respectively).

*An exception to this is found in the comparative retail food prices for the Norfolk-Virginia Beach-Portsmouth, Richmond, and Northern Virginia areas issued monthly by the Virginia Department of Labor and Industry.

TABLE 20. DISTRIBUTION OF FAMILY INCOME, VIRGINIA PLANNING DISTRICTS:

(Percent of Families)

| Area | Less Than \$1,000 | \$1,000- 1,999 | | | | | | | | | | | | | | | | \$25,000- 49,999 | | | |
|-----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|---------------------|---------------------|---------------------|-------|------|--|--|---------------------|--|--|--|
| | | \$1,000- 1,999 | \$2,000- 2,999 | \$3,000- 3,999 | \$4,000- 4,999 | \$5,000- 5,999 | \$6,000- 6,999 | \$7,000- 7,999 | \$8,000- 8,999 | \$9,000- 9,999 | \$10,000- 11,999 | \$12,000- 14,999 | \$15,000- 24,999 | | | | | | | | |
| Lenovisco | 6.86 | 11.20 | 9.64 | 10.24 | 7.99 | 8.59 | 7.59 | 7.44 | 6.88 | 5.24 | 7.99 | 5.59 | 3.82 | 0.77 | 0.15 | | | | | | |
| Planning District 1 | | | | | | | | | | | | | | | | | | | | | |
| Cumberland Plateau | | | | | | | | | | | | | | | | | | | | | |
| Planning District 2 | 4.63 | 8.82 | 8.41 | 9.18 | 8.90 | 8.64 | 7.99 | 7.95 | 7.78 | 6.50 | 9.15 | 6.50 | 4.34 | 0.90 | 0.30 | | | | | | |
| Mount Rogers | | | | | | | | | | | | | | | | | | | | | |
| Planning District 3 | 3.53 | 6.48 | 7.05 | 8.49 | 9.55 | 9.92 | 9.25 | 9.00 | 7.93 | 6.55 | 9.09 | 6.55 | 5.23 | 1.18 | 0.19 | | | | | | |
| New River Valley | | | | | | | | | | | | | | | | | | | | | |
| Planning District 4 | 2.43 | 4.64 | 5.10 | 5.83 | 6.17 | 8.30 | 9.38 | 8.36 | 8.43 | 7.37 | 12.29 | 9.86 | 9.82 | 1.72 | 0.29 | | | | | | |
| Fifth | | | | | | | | | | | | | | | | | | | | | |
| Planning District 5 | 1.72 | 3.17 | 4.31 | 5.56 | 5.61 | 6.91 | 7.80 | 7.92 | 8.31 | 7.55 | 13.90 | 12.51 | 11.74 | 2.40 | 0.58 | | | | | | |
| Central Shenandoah | | | | | | | | | | | | | | | | | | | | | |
| Planning District 6 | 2.05 | 4.17 | 4.86 | 6.29 | 6.60 | 8.11 | 8.14 | 8.92 | 8.29 | 7.06 | 11.99 | 11.62 | 9.49 | 2.08 | 0.36 | | | | | | |
| Lord Fairfax | | | | | | | | | | | | | | | | | | | | | |
| Planning District 7 | 2.46 | 4.39 | 5.34 | 6.17 | 7.33 | 8.69 | 9.71 | 8.91 | 8.30 | 7.46 | 11.90 | 9.52 | 7.53 | 1.85 | 0.44 | | | | | | |
| Northern Virginia | | | | | | | | | | | | | | | | | | | | | |
| Planning District 8 | 1.51 | 1.08 | 1.43 | 1.99 | 2.47 | 3.14 | 3.62 | 4.54 | 4.84 | 5.11 | 10.74 | 15.44 | 32.00 | 11.07 | 1.00 | | | | | | |
| Rappahannock-Rapidan | | | | | | | | | | | | | | | | | | | | | |
| Planning District 9 | 3.56 | 5.45 | 5.89 | 7.38 | 8.38 | 8.47 | 8.91 | 7.60 | 7.81 | 5.57 | 10.25 | 9.39 | 8.49 | 2.22 | 0.62 | | | | | | |
| Thomas Jefferson | | | | | | | | | | | | | | | | | | | | | |
| Planning District 10 | 2.94 | 5.28 | 5.72 | 6.51 | 6.80 | 7.84 | 7.53 | 7.34 | 6.76 | 6.29 | 11.54 | 10.75 | 10.67 | 3.23 | 0.68 | | | | | | |
| Central Virginia | | | | | | | | | | | | | | | | | | | | | |
| Planning District 11 | 2.04 | 4.06 | 5.08 | 6.08 | 6.20 | 7.39 | 7.29 | 7.77 | 7.96 | 7.23 | 13.68 | 12.35 | 10.26 | 2.19 | 0.43 | | | | | | |
| West Piedmont | | | | | | | | | | | | | | | | | | | | | |
| Planning District 12 | 2.41 | 5.01 | 5.18 | 5.94 | 7.89 | 8.51 | 8.75 | 8.32 | 7.90 | 7.85 | 12.90 | 9.87 | 7.75 | 1.47 | 0.24 | | | | | | |
| Southside | | | | | | | | | | | | | | | | | | | | | |
| Planning District 13 | 4.06 | 8.30 | 8.90 | 9.23 | 9.04 | 8.56 | 8.17 | 7.66 | 7.09 | 5.56 | 9.33 | 7.61 | 5.26 | 1.06 | 0.17 | | | | | | |
| Piedmont | | | | | | | | | | | | | | | | | | | | | |
| Planning District 14 | 4.82 | 7.97 | 8.57 | 8.43 | 9.49 | 9.56 | 8.18 | 6.83 | 5.99 | 6.07 | 8.98 | 7.82 | 5.80 | 1.04 | 0.45 | | | | | | |
| Richmond Regional | | | | | | | | | | | | | | | | | | | | | |
| Planning District 15 | 2.08 | 2.56 | 3.50 | 4.30 | 5.20 | 5.55 | 6.17 | 6.92 | 7.16 | 7.23 | 13.70 | 14.84 | 16.08 | 3.62 | 1.00 | | | | | | |
| Radco | | | | | | | | | | | | | | | | | | | | | |
| Planning District 16 | 2.42 | 4.47 | 4.18 | 5.14 | 5.64 | 7.66 | 8.92 | 9.09 | 8.41 | 6.55 | 10.84 | 12.22 | 12.06 | 1.84 | 0.54 | | | | | | |
| Northern Neck | | | | | | | | | | | | | | | | | | | | | |
| Planning District 17 | 4.94 | 8.57 | 8.88 | 10.50 | 8.63 | 8.82 | 7.57 | 7.24 | 6.46 | 5.35 | 7.44 | 6.43 | 6.87 | 1.83 | 0.45 | | | | | | |
| Middle Peninsula | | | | | | | | | | | | | | | | | | | | | |
| Planning District 18 | 3.47 | 6.06 | 7.00 | 7.91 | 7.26 | 8.48 | 7.29 | 7.84 | 7.35 | 6.91 | 9.82 | 10.16 | 8.59 | 1.42 | 0.44 | | | | | | |
| Crater | | | | | | | | | | | | | | | | | | | | | |
| Planning District 19 | 3.29 | 3.89 | 4.84 | 6.09 | 6.00 | 7.49 | 7.86 | 8.26 | 7.50 | 7.42 | 12.12 | 11.81 | 11.23 | 1.89 | 0.31 | | | | | | |
| Southeastern Virginia | | | | | | | | | | | | | | | | | | | | | |
| Planning District 20 | 4.20 | 3.50 | 4.57 | 5.48 | 6.08 | 6.97 | 7.34 | 7.87 | 7.38 | 6.86 | 12.05 | 12.32 | 12.58 | 2.25 | 0.55 | | | | | | |
| Peninsula | | | | | | | | | | | | | | | | | | | | | |
| Planning District 21 | 3.03 | 2.34 | 3.51 | 4.27 | 5.08 | 6.10 | 6.91 | 7.25 | 7.69 | 7.33 | 13.11 | 13.99 | 16.33 | 2.53 | 0.54 | | | | | | |
| Accomack-Norhampton | | | | | | | | | | | | | | | | | | | | | |
| Planning District 22 | 5.65 | 8.40 | 10.55 | 11.23 | 10.24 | 10.28 | 7.40 | 7.81 | 5.76 | 4.57 | 6.57 | 5.08 | 5.40 | 1.07 | 0.00 | | | | | | |
| State | 2.82 | 3.75 | 4.43 | 5.27 | 5.77 | 6.57 | 6.86 | 7.18 | 7.03 | 6.58 | 11.73 | 12.20 | 15.23 | 3.97 | 0.61 | | | | | | |

C. Distribution of Income

The distribution of family income provides data on the number of families receiving income within a specified range. The data in Table 20 show the percentage of families in each planning district that received income within the following ranges: less than \$1,000, \$1,000-\$1,999, \$2,000-\$2,999, \$3,000-\$3,999, \$4,000-\$4,999, \$5,000-\$5,999, \$6,000-\$6,999, \$7,000-\$7,999, \$8,000-\$8,999, \$9,000-\$9,999, \$10,000-\$11,999, \$12,000-\$14,999, \$15,000-\$24,999, \$25,000-\$49,999, and \$50,000 and over.

As was expected, areas with a high average income also had a large number of families with a relatively high income. For example, in the Northern Virginia area, over 12% of all families had incomes in excess of \$25,000, compared to low income areas such as the Southwest, Southside, and Eastern Shore areas, where this percentage varied from 1% to 1.5%, as a rule. To get some idea of how different the extremes in income distribution were and how these in turn differed from the state distribution, consider Figure 8, which shows the cumulative percentage of all families receiving less than specified levels of income for Northern Virginia, the extreme Southwest; and Virginia as a whole. About 1% of all families in extreme Southwest Virginia had income of less than \$5,000 compared with about 22% of

Figure 8. Cumulative Income Distribution, Loudoun Planning District, Northern Virginia Planning District, and Virginia: 1970

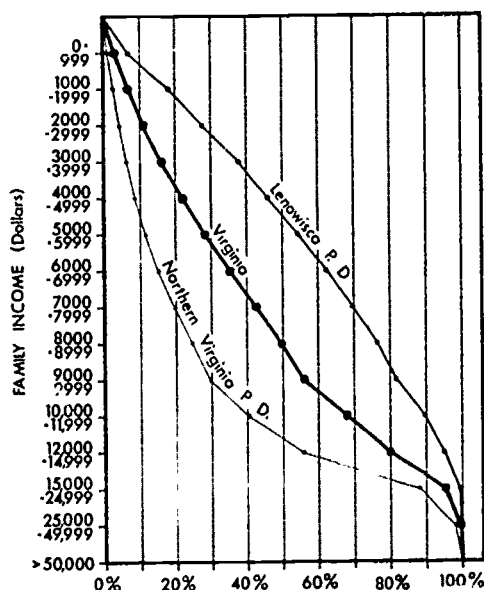
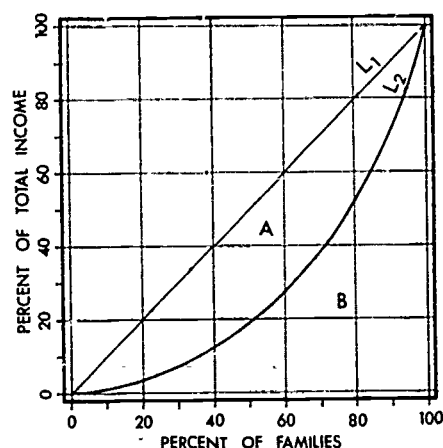


Figure 9. Hypothetical Lorenz Curve



all Virginia families and about 8% of Northern Virginia families. On the other hand, only about 10% of Southwest families had income of \$10,000 or greater, compared with 32% of all Virginia families, and 60% of Northern Virginia families.

In discussing income distribution, a logical area for inquiry is the equality of income distribution. A common means of measuring equality of income distribution which relates the percentage of total units receiving income (families in this case) is the Lorenz Curve, a hypothetical example of which is shown in Figure 9. The line labelled L_1 in this figure may be called the line of equality. If all families received the same amount of income, this would be the Lorenz Curve. According to L_1 10% of all families receive 10% of total income, 20% of all families receive 20% of total income, and so on. The actual situation is more probably typified by line L_2 . In this case, the lowest 10% of all families receive 1% of total income, the lowest 20% receive 4% of total income, and so on.

An important use of the Lorenz Curve is to determine the index of income concentration. This may be defined as the ratio of the area (A) between the diagonal (L_1) and the Lorenz Curve (L_2) to the total area under the diagonal (area A plus area B). Algebraically, this index equals:

$$I = \frac{A}{A+B}$$

The value of the index ranges from a minimum of almost 1.0 (the situation where one family received all the

income in a given area) to 0.0 where all families would receive an equal income. In other words, the higher the value of the index, the more heavily concentrated income is in that particular area.

Unfortunately, these data are not available on a planning district level. The values of the index for those portions of the State for which these data have been computed are shown in Table 21. As the data show, urban and rural nonfarm areas appear to have had relatively less inequality in income distribution than

did rural farm areas. This relationship was true for the State as a whole and for a metropolitan-nonmetropolitan classification. It is also interesting to note that, perhaps not surprisingly, suburban areas showed relatively less income inequality than did central cities. In each SMSA, the suburban portion ("urban balance" or in the case of the Norfolk area, Virginia Beach and Chesapeake cities) showed a lower index of income concentration than did the central city (with the exception of Colonial Heights, which is essentially suburban in character).

TABLE 21. INDEX OF INCOME CONCENTRATION,
SELECTED AREAS OF VIRGINIA: 1970

| Area | Index |
|--|-------------|
| <u>Virginia</u> | <u>.379</u> |
| Urban | .364 |
| Rural Nonfarm | .365 |
| Rural Farm | .423 |
| <u>Metropolitan</u> | <u>.359</u> |
| Central Cities | .366 |
| Other Urban | .338 |
| Rural Nonfarm | .336 |
| Rural Farm | .401 |
| <u>Nonmetropolitan</u> | <u>.369</u> |
| Urban | .360 |
| Rural Nonfarm | .360 |
| Rural Farm | .420 |
| <u>Lynchburg SMSA</u> | <u>.347</u> |
| Lynchburg City | .387 |
| Urban Balance | .279 |
| <u>Newport News-Hampton SMSA</u> | <u>.332</u> |
| Hampton City | .319 |
| Newport News City | .343 |
| Urban Balance | .287 |
| <u>Norfolk-Virginia Beach-Portsmouth</u> | <u>.360</u> |
| Chesapeake City | .305 |
| Norfolk City | .384 |
| Portsmouth City | .353 |
| Virginia Beach City | .335 |
| <u>Petersburg-Hopewell-Colonial Heights SMSA</u> | <u>.334</u> |
| Colonial Heights City | .277 |
| Petersburg City | .366 |
| Urban Balance | .304 |
| <u>Richmond SMSA</u> | <u>.341</u> |
| Richmond City | .393 |
| Urban Balance | .292 |
| <u>Roanoke SMSA</u> | <u>.342</u> |
| Roanoke City | .363 |
| Urban Balance | .301 |
| <u>Northern Virginia</u> | <u>.342</u> |
| Alexandria City | .369 |
| Arlington County | .379 |
| Urban Balance | .321 |

Chapter VII.

Urban-Rural and Metropolitan-Nonmetropolitan Comparisons

Many of the socioeconomic differences within the State which have been considered in preceding chapters were probably due in some measure to differences in the degree of urbanization and the racial composition of the population. In this chapter socioeconomic differences for the State are analyzed on an urban-rural and metropolitan-nonmetropolitan basis.

A. Urban-Rural Comparisons

In 1970 2.9 million or 63.1% of Virginia's 4.6 million persons lived in urban areas. Although the definition of urban as used by the Bureau of the Census is rather cumbersome, the urban population essentially includes almost all residents of defined metropolitan areas (both city and suburban portions) and residents of incorporated or unincorporated places of 2,500 or more inhabitants. The balance of the population is rural. The rural population, in turn, is divided into residents of farms (rural farms) and residents of other rural places (rural nonfarm). Of Virginia's 1.7 million rural persons, 1.5 million or 84.4% were classified as rural nonfarm.*

1. Demographic Characteristics.

Residents of urban areas and rural nonfarm areas were younger (median age 26.5 years and 26.7 years, respectively) than were farm residents (35.2 years). In urban areas the proportion of the population which was white (81.7%) was slightly higher than that in either the rural nonfarm (80.0%) or rural farm (79.0%) populations. Urban areas were also comprised of more females (103.7 to every 100 males) than were the rural nonfarm and rural farm areas (100.6 and 99.3, respectively). Finally, as might be expected, a larger portion of the urban population was born outside the United States (2.2%) than either the rural nonfarm (0.5%) or the rural farm (0.7%) population.

2. Mobility. Analysis of the data contained in Table 22 show that the urban population was, on the whole, somewhat more mobile than the rural population. For all persons born as United States

citizens whose place of birth was reported, only 56.4% of the urban population was born in the State of Virginia, as compared with 81.8% of the rural nonfarm population and 88.8% of the rural farm population. In urban areas a total of 1,163,286 persons reported being born in a state other than Virginia. Of these, 24.0% were born in the Northeast, 16.2% in North Central States, 52.5% in the South (other than Virginia), and 7.3% in the West.** In rural nonfarm areas, some 248,929 persons were born in other states. The percentage distribution for regions of the United States was as follows: Northeast, 18.4%; North Central, 12.1%; South, 64.8%; and West, 4.7%. Finally, some 26,722 residents of farms report a state of birth other than Virginia, of which 15.3% were from the Northeast, 9.7% from North Central States, 71.5% from the South, and 3.5% from the West. In brief then, analysis of state of birth data show that not only were urban residents somewhat less likely to have been born in Virginia than rural residents, but they were also less likely to have been born in other Southern States as well.

The data in Table 22 also show the recent mobility of Virginia's population. A person is considered to have "moved" if his 1970 residence (permanent) was

* The Bureau of the Census recently revised the distribution of rural farm-rural nonfarm population. The revised data show the rural nonfarm population was 1,524,556 in 1970 and the rural farm population to be 192,784. Because no characteristics of these persons are available, the analysis in this chapter is based on the data originally published by the Bureau. Although the absolute numbers will change, it is unlikely that the percentage distribution of the various socioeconomic indicators discussed in this chapter will change to any considerable extent. See U.S. Bureau of the Census, Rural Population by Farm-Nonfarm Residence for Counties in the United States: 1970 [PC(S1)-27], 1972.

**The states which comprise these areas are listed on page 10.

TABLE 22. MOBILITY STATUS OF VIRGINIA'S POPULATION, BY URBAN AND RURAL RESIDENCE: 1970

| | Urban | Rural Nonfarm | Rural Farm |
|----------------------------|-----------|------------------|---------------|
| Total Population | 2,931,470 | 1,448,756 | 268,253 |
| Born in U.S.* | 2,866,346 | 1,442,126 | 266,451 |
| Born in Virginia | 1,533,535 | 1,143,005 | 229,966 |
| Born in Other States | 1,163,286 | 248,929 | 26,722 |
| Northeast | 279,612 | 45,831 | 4,081 |
| North Central | 188,815 | 30,049 | 2,582 |
| South | 610,158 | 161,319 | 19,121 |
| West | 84,701 | 11,730 | 938 |
| Other and Not Reported | 169,525 | 50,192 | 9,763 |
| Born Abroad | 65,124 | 6,630 | 1,802 |
| Total Population | 2,685,173 | 1,320,650 | 251,811 |
| Aged 5 or More | | | |
| Residence in 1965: | | | |
| 1. Same House | 1,190,554 | 763,074 | 189,162 |
| 2. Different House in U.S. | 1,242,951 | 495,791 | 55,004 |
| Same County | 455,066 | 262,002 | 36,685 |
| Different County | 787,885 | 233,789 | 18,319 |
| Same State | 325,912 | 140,404 | 11,842 |
| Different State | 461,973 | 93,385 | 6,477 |
| Northeast | 107,194 | 17,523 | 1,026 |
| North Central | 77,345 | 12,899 | 573 |
| South | 207,628 | 53,725 | 4,401 |
| West | 69,806 | 9,238 | 477 |
| 3. Abroad | 69,293 | 9,222 | 512 |
| 4. Moved, 1965 Residence | | | |
| Not Reported | 182,375 | 52,563 | 7,133 |

*Includes persons born of U.S. citizens living outside of the United States.

different from his residence in 1965.* The data show that 55.7% of urban residents (aged 5 or more years) moved between 1965 and 1970. The percentage was somewhat lower in rural areas--42.2% for rural nonfarm and 24.9% for rural farm. This of course is based on 1970 residence and consequently measures movement to or within an area. It is probable that the number of rural farm residents was greater in 1965 than it was in 1970.

A person is considered to have "migrated" if he changes his county of residence. Between 1965 and 1970, 787,885 of Virginia's 1970 urban residents aged 5 or more years migrated. This represents 29.3% of all urban residents and 63.4% of all urban residents who moved between 1965 and 1970 (and whose 1965 residence was reported). A majority of these persons, 461,973 or 58.6%, moved into urban areas of Virginia from another state. The data show that 23.2% of interstate migrants living in urban areas of Virginia in 1970 lived in the Northeast in 1965; 16.7% lived in North Central states;

44.9% lived in other Southern states; and 15.1% lived in the West.

The rate of migration was somewhat less in the rural portions of Virginia. In the rural nonfarm sector, a total of 233,789 persons (17.7% of the entire state population and 41.9% of the population moving between 1965 and 1970) changed their county of residence (migrated). Only 39.9% of rural nonfarm migrants, or 93,385 persons, lived in other states, with more than half of these (53,725 or 57.5%) living in other Southern states. 18.8% lived in the Northeast, 13.8% lived in North Central states, and 9.9% lived in the West.

The rate of migration was even lower among residents of farms; 7.3% of these persons migrated in the latter

* Attendance at college or military service is considered by the Bureau of the Census to constitute a permanent change in residence.

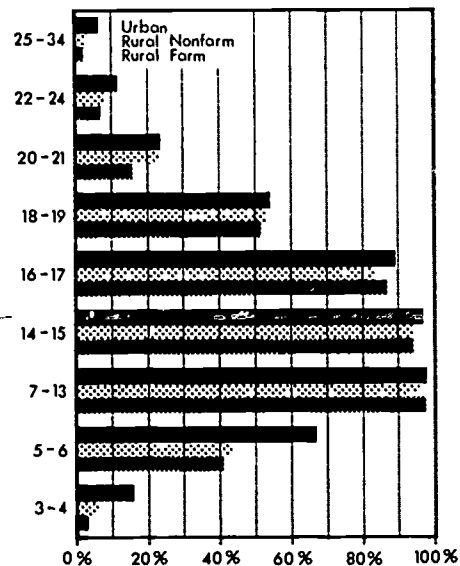
half of the 1960-1970 decade, accounting for only one-third of all rural farm movers. Of the 18,319 migrants only 6,477 or 35.4% were interstate migrants. More than two-thirds of interstate migrants (68.0%) originated in other Southern states, with 15.8% coming from the Northeast, 8.8% from North Central states, and 7.4% coming from the West.

In brief, the pattern of mobility resembled the results of the state of birth analysis. Urban areas generally had a somewhat more mobile population which was more likely to have moved into Virginia from a state outside the census south.

3. Education. Data on the level of educational achievement for the adult population of the State (for these purposes, those aged 25 and over in 1970) are presented in Table 23. The level of educational achievement in urban areas appears to have been somewhat greater than that of rural areas, and rural nonfarm dwellers were better educated, on the average, than were farm dwellers. The median number of school years completed (that is, the number of years at which half the population is above and half below) was 12.2 years for urban areas, 9.7 years for rural nonfarm, and 8.9 years for rural farm.

The percentage of persons with no schooling was quite small--only 1.2% in urban areas and 2.4% in rural areas. However, urban areas generally had a larger number of well educated persons and a smaller number of poorly educated persons than did rural areas. Only 23.9% of urban residents had no secondary education, compared with 45.1% of rural nonfarm residents and 51.2% of rural farm

Figure 10. Percent of Population Enrolled in School, by Age and Urban-Rural Residence; Virginia: 1970



residents. On the other hand, 56.4% of urban residents had completed secondary school (and 28.3% had at least one year of college) compared with 34.5% (and 13.3%) of rural nonfarm residents and 28.6% (and 11.1%) of rural farm residents.

Ideally, this is a situation which should change with the passage of time. The 1970 rates of school enrollment by age (see Figure 10) show that there was not a great deal of difference in school enrollment by age between urban and rural areas, although urban rates were higher

TABLE 23. EDUCATIONAL ACHIEVEMENT OF VIRGINIA'S POPULATION AGED 25 AND OVER, BY URBAN-RURAL RESIDENCE: 1970

| | Urban | Rural Nonfarm | Rural Farm |
|----------------------------------|-----------|---------------|------------|
| Population 25 and Over | 1,530,235 | 757,769 | 158,078 |
| Years of School Completed: | | | |
| 0 | 17,954 | 17,886 | 3,868 |
| 1-4 | 60,037 | 71,138 | 16,532 |
| 5-6 | 92,736 | 89,320 | 21,010 |
| 7 | 89,539 | 97,984 | 25,415 |
| 8 | 105,296 | 65,607 | 14,075 |
| 9-11 | 302,125 | 154,848 | 31,989 |
| 12 | 428,811 | 160,559 | 27,572 |
| 13-15 | 190,555 | 50,370 | 9,913 |
| 16 | 140,229 | 31,196 | 5,269 |
| 17+ | 102,953 | 18,861 | 2,435 |
| Median Years of School Completed | 12.2 | 9.7 | 8.9 |

TABLE 24. EMPLOYMENT AND LABOR FORCE CHARACTERISTICS OF VIRGINIA, BY URBAN-RURAL RESIDENCE: 1970

| | Urban | Rural Nonfarm | Rural Farm |
|---------------------------------|-----------|------------------|---------------|
| Male | | | |
| Population 16 and Over | 996,919 | 481,825 | 96,215 |
| Labor Force | 817,596 | 353,794 | 70,046 |
| Military | 161,708 | 9,899 | 293 |
| Civilian Labor Force | 655,888 | 343,895 | 69,753 |
| Employed | 641,630 | 334,977 | 68,500 |
| Unemployed | 14,258 | 8,918 | 1,253 |
| Female- | | | |
| Population 16 and Over | 1,062,045 | 495,343 | 97,054 |
| Labor Force | 475,636 | 193,912 | 31,385 |
| Military | 3,535 | 187 | 7 |
| Civilian Labor Force | 472,101 | 193,725 | 31,378 |
| Employed | 454,560 | 184,464 | 30,119 |
| Unemployed | 17,541 | 9,261 | 1,259 |
| Percent With Children | | | |
| Aged 0-5 in Labor Force | 32.9 | 35.6 | 33.6 |
| Percent With Children | | | |
| Aged 6-17 in Labor Force | 50.7 | 50.9 | 42.9 |
| Percent With No Children | | | |
| Under 18 in Labor Force | 46.6 | 35.9 | 28.7 |

at all ages, particularly among the youngest (3-6) and oldest (21-34) segments of the school-going population. The higher rate among young children reflected higher attendance at nursery schools and kindergartens while the higher rate among persons aged 21 and over merely reflects the urban location of the majority of colleges and universities throughout the state. However, in the principle years of school attendance (7-17), there was little difference in rates of enrollment.

The discussion of education differences among urban and rural portions of the state leads to a rather interesting question regarding expenditures by localities for education and consequent outmigration of individuals. In many of the smaller, more rural jurisdictions of the State, the largest single share of local government expenditure is devoted to the provision of educational services. At the same time, analysis of migration trends in Virginia in the period from 1960 to 1970 show that: a) outmigration was a common factor to many of the rural areas of the state and b) the incidence of outmigration was highest among those who recently graduated from high school.* The educational input for outmigrants was paid for by the area

of origin, which was, often as not, a relatively impoverished rural area. Consequently, there was outmigration of real assets in the form of human capital from poor areas to relatively wealthy areas. In other words, poor areas of the state subsidized richer areas by this transfer of resources.

4. Employment and Labor Force.
Table 24 presents data on the composition of the labor force in Virginia's urban and rural areas. Labor force participation was higher among both sexes in urban areas than it was in rural areas. In urban areas, 82.0% of all males aged 16 and over and 44.8% of all females in this group were in the labor force in 1970. For rural nonfarm areas, these rates were 73.4% for males and 39.1% for females; in rural farm areas, they were 72.8% and 32.2%, respectively. In urban areas, the total labor force was 1,293,232 of which 475,636 or 36.8% was female. For rural nonfarm residents, the total labor force included 547,706

*See William J. Serow and Michael A. Spar, Virginia's Population: A Decade of Change. Net Migration for State Planning Districts, Charlottesville, Tayloe Murphy Institute, 1972.

persons, of which 193,912 (35.4%) were female. Finally, among the rural farm population, the labor force comprised 101,431 individuals of which 31,385 or 30.9% were female.

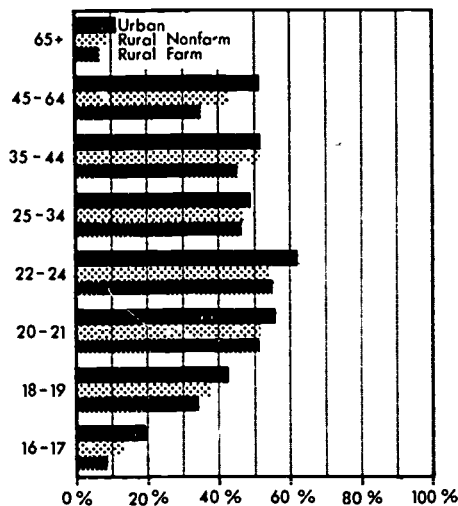
A sizeable portion of the labor force in urban areas included individuals in military service. Among males, 16.2% of all residents aged 16 and over were in the armed forces. These individuals accounted for 19.8% of the male urban labor force. Naturally, among females, the incidence of military personnel was much lower--only 0.7% of the total labor force. The military was a far less significant factor in rural areas. Among the rural nonfarm labor force, only 2.8% of the males and 0.1% of the females in the labor force were military. Among the rural farm labor force, the rates were lower still--0.4% of males and 0.02% of females.

Those persons in the labor force not in the military comprise the civilian labor force. It is this datum which provides the base for measuring unemployment. A person who is not employed, but is actively seeking work (and will accept it) is considered unemployed. In 1970 the rate of unemployment was lower for the urban labor force (2.8% of the civilian labor force) than it was for the rural nonfarm (3.4%), but higher than that of the rural farm labor force (2.5%). The rate of unemployment among women was higher than it was for men in all three categories: urban rates of unemployment were 2.2% for males and 3.7% for females; rural nonfarm rates were 2.6% and 4.8%, respectively; and rural farm rates were 1.8% and 4.0%, respectively.

Somewhat surprising in light of the higher rates of labor force participation among urban women is the fact that the presence of young children (those aged 0 to 5) appeared to be a greater disincentive for labor force participation among urban women than among rural women. As the data in Table 24 show, labor force participation rates for women with children in this age group were higher among rural nonfarm (35.6%) and rural farm (33.6%) women than among urban women (32.9%). The relationship changed somewhat for women with children between the ages of 6 and 17 (and no children aged 0 to 5); rural nonfarm women participated to a slightly greater extent than did urban women (50.9% and 50.7%, respectively), but both groups participated to a somewhat greater extent than did rural farm women (42.9%). Finally, for women without children under 18 years of age, the pattern was the same as for all women--the highest rate of participation was among urban

women (46.6%), followed by rural nonfarm women (35.9%) and rural farm women (28.7%). Rates in all three residence categories were lower for women without children under age 18 than they were for women with children aged 6-17 (and among rural farm women even lower than the rate for women with children aged 0-5). This was presumably due to decreasing labor force participation with age (see Figure 11).

Figure 11. Labor Force Participation Rates of Virginia Women by Age and Urban-Rural Residence: 1970



5. Occupational Distribution. The distribution of Virginia's labor force by occupation in 1970 is presented for the urban, rural nonfarm, and rural farm segments in Table 25. The data represent the employed civilian labor force in each instance. As is to be expected, there was considerable variation in the occupational composition. In urban areas, white collar workers (professionals, managers, sales workers, and clerical workers) accounted for 58.0% of the labor force. This percentage was somewhat lower in rural areas, totaling 34.3% of employment in rural nonfarm areas and 25.8% of employment in rural farm areas.

Blue collar and agricultural employment were of relatively greater importance in rural areas. Blue collar workers (craftsmen, operatives, and nonfarm laborers) comprised only 29.1% of the urban labor force, compared with 50.5% of the rural nonfarm and 40.0% of the rural farm labor force. Obviously, agricultural employment was a much larger share of the labor force among the rural

TABLE 25. OCCUPATIONAL DISTRIBUTION OF VIRGINIA'S LABOR FORCE,
BY URBAN-RURAL RESIDENCE: 1970

| | Urban | Rural Nonfarm | Rural Farm |
|----------------------|-----------|------------------|---------------|
| Professional | 211,987 | 55,216 | 7,575 |
| Managerial | 105,386 | 35,728 | 5,034 |
| Sales | 83,142 | 24,661 | 3,761 |
| Clerical | 235,467 | 62,574 | 9,066 |
| Total White Collar | 635,982 | 178,179 | 25,436 |
| Craftsmen | 142,908 | 89,168 | 12,164 |
| Operatives | 100,216 | 107,738 | 16,804 |
| Transport Operatives | 37,244 | 27,838 | 4,504 |
| Nonfarm Laborers | 39,075 | 37,654 | 5,932 |
| Total Blue Collar | 319,443 | 262,398 | 39,404 |
| Farmers | 1,149 | 5,020 | 19,193 |
| Farm Laborers | 2,053 | 12,435 | 6,316 |
| Total Agricultural | 3,203 | 17,455 | 25,509 |
| Service | 115,779 | 47,236 | 6,034 |
| Private Household | 21,783 | 14,173 | 2,236 |
| Total Service | 137,562 | 61,409 | 8,270 |
| TOTAL | 1,096,190 | 519,441 | 98,619 |

farm population (25.9%) than among either the rural nonfarm (3.4%) or urban (0.3%) populations.

Finally, there was not a great deal of variation in the relative number of individuals engaged in service occupations, although the share in farm areas was somewhat lower (8.4%) than in rural nonfarm (11.8%) and urban areas (12.5%).

Looking at the matter from a slightly different perspective, urban areas contained 63.9% of the State's employed labor force and accounted for 75.7% of white collar employment, but only 51.4% of blue collar and 6.9% of agricultural employment. The share of service employment located in urban areas (66.4%) was slightly higher than the share of total employment in urban areas.

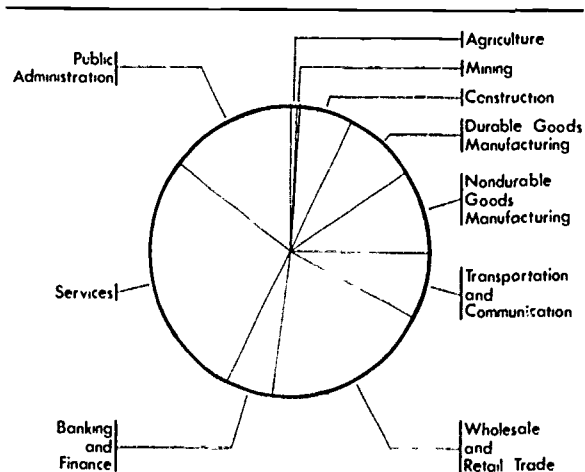
Rural nonfarm residents comprised some 30.3% of the State's employed civilian labor force. These areas contained a disproportionately high share of blue collar employment and a somewhat higher share of agricultural employment (42.2% and 37.8%, respectively) but relatively low shares of white collar (21.2%) and service employment (29.6%).

Finally, while rural farm areas contained only 5.8% of the State's

employed civilian labor force, these areas contained fully 55.3% of the agricultural labor force. Additionally, rural farm areas accounted for 3.0% of white collar employment, 6.3% of blue collar employment, and 4.0% of service employment.

6. Industrial Composition. Data which depict the industrial composition of Virginia's employed civilian labor

Figure 12. Industrial Composition of Virginia's Urban Labor Force: 1970



force are presented in Table 26. These data show, on a place of residence basis, the number of workers classified by the principle good or service produced by their employer. Such data can be very useful in comparative analyses of the economy of given areas or sectors of the State. The presentation of data specific to urban-rural residence, should show the pattern of concentration of different industries within the State of Virginia.

The data show considerable variation in the industrial mix of the labor force in urban, rural nonfarm, and rural farm areas. Nearly two-thirds of the urban labor force was concentrated into three industrial categories: services (28.1% of the labor force), wholesale and retail trade (19.4%) and public administration (14.7%). Among rural nonfarm workers, services again accounted for the largest single share of the labor force, with 21.4%. Second was nondurable goods manufacturing with 18.5%, followed by trade with 15.1% of the labor force. Together, these three categories included 55.9% of the labor force for the rural nonfarm population. For the rural farm labor force, the leading sector was agriculture, employing 27.1%. This was followed by trade with 16.4% and nondurable goods manufacturing with 15.7%. These three sectors collectively employed 59.3% of the rural farm labor force.

If the sectors are ranked in relative importance for each of the three residential categories, the result is that urban areas showed the highest rank for five categories (transportation, trade, finance, service, and public administration) and the lowest rank for the other five

categories. Rural nonfarm areas had the highest rank in mining, durable goods manufacturing and nondurable goods manufacturing, and construction and were second highest in the other six categories. Rural farm areas were highest in agricultural, second highest in mining, construction, and both manufacturing sectors. The relative industrial mix of all three areas (urban, rural nonfarm, and rural farm) is shown graphically in Figures 12-14.

In order to evaluate the significance of these apparent differences in the industrial mix of the urban and rural portions of the state, location quotients have been constructed. It will be recalled (from Chapter 5) that a location quotient for any industry, L_i , in any geographical area, j , ($L_{i,j}$) may be defined as the ratio of employment in that industrial sector and geographical area ($E_{i,j}$) taken as a percentage of total employment in the area (E_j) to total employment in that sector in the entire state ($E_{i,v}$) considered as a percentage of total employment in the state (E_v), or:

$$L_{i,j} = \frac{E_{i,j}/E_j}{E_{i,v}/E_v}$$

The location quotients for all industrial sectors, classified by urban, rural nonfarm, and rural farm residence, are given in Table 27.

A quotient in excess of unity means that employment in that sector was more

Figure 13. Industrial Composition of Virginia's Rural Nonfarm Labor Force: 1970

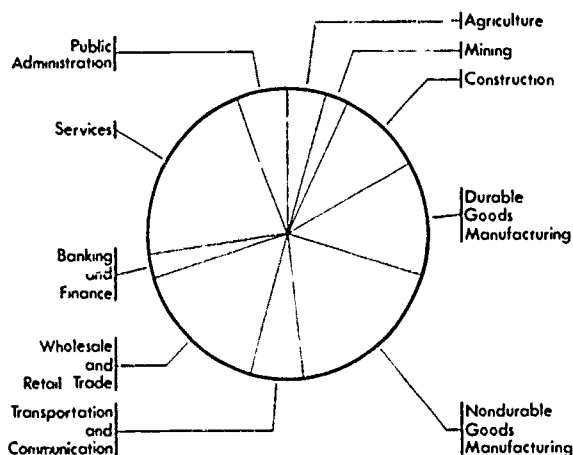


Figure 14. Industrial Composition of Virginia's Rural Farm Labor Force: 1970

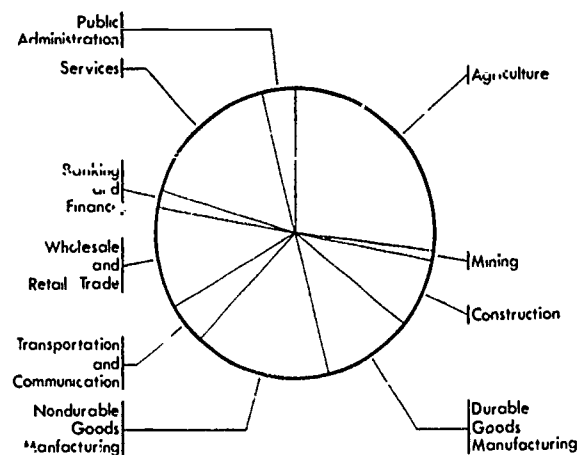


TABLE 26. INDUSTRIAL COMPOSITION OF VIRGINIA'S LABOR FORCE,
BY URBAN-RURAL RESIDENCE: 1970

| | Urban | Rural Nonfarm | Rural Farm |
|---|-----------|------------------|---------------|
| Industry | | | |
| Agriculture, Forestry, Fisheries | 7,044 | 23,485 | 26,733 |
| Mining | 2,367 | 13,534 | 1,166 |
| Construction | 68,170 | 50,932 | 7,701 |
| Durable Goods Manufacturing | 92,794 | 66,321 | 9,929 |
| Nondurable Goods Manufacturing | 103,811 | 95,849 | 15,518 |
| Transportation, Communication, and Utilities | 80,790 | 30,765 | 4,393 |
| Wholesale and Retail Trade | 213,049 | 83,365 | 11,383 |
| Finance, Insurance, and Real Estate | 60,072 | 13,420 | 1,928 |
| Services | 307,487 | 111,292 | 16,191 |
| Public Administration | 160,606 | 30,748 | 3,677 |
| TOTAL | 1,096,190 | 519,441 | 98,619 |

TABLE 27. LOCATION QUOTIENTS OF INDUSTRIAL COMPOSITION OF VIRGINIA'S
LABOR FORCE, BY URBAN-RURAL RESIDENCE: 1970

| | Urban | Rural Nonfarm | Rural Farm |
|---|-------|------------------|---------------|
| Agriculture | .19 | 1.35 | 8.12 |
| Mining | .22 | 2.61 | 1.18 |
| Construction | .84 | 1.33 | 1.05 |
| Durable Goods Manufacturing | .86 | 1.30 | 1.02 |
| Nondurable Goods Manufacturing | .75 | 1.47 | 1.25 |
| Transportation, Communication, and Utilities | 1.09 | .88 | .66 |
| Trade | 1.08 | .89 | .64 |
| Finance | 1.25 | .59 | .45 |
| Services | 1.11 | .84 | .65 |
| Public Administration | 1.29 | .52 | .33 |

TABLE 28. MEAN FAMILY INCOME AND INCIDENCE OF POVERTY FOR
VIRGINIA FAMILIES, BY URBAN-RURAL RESIDENCE: 1970

| | Urban | Rural Nonfarm | Rural Farm |
|---|----------|------------------|---------------|
| Number of Families | 729,703 | 361,472 | 71,081 |
| Mean Income | \$11,779 | \$8,645 | \$7,920 |
| Number of Poor Families | 66,089 | 62,593 | 14,323 |
| Mean Income of Poor Families | \$1,925 | \$2,195 | \$1,746 |
| Mean Income Deficit | \$1,654 | \$1,503 | \$1,254 |
| Percent of Families in Poverty | 9.1 | 17.3 | 20.2 |
| Number of Poor Unrelated Individuals | 70,585 | 38,721 | 5,979 |
| Percent of Individuals in Poverty | 30.5 | 55.5 | 52.0 |
| Deficit/Income Ratio for Poor Families | .86 | .68 | .72 |
| Mean Income as a Percent of State Total | 111.5% | 81.8% | 74.9% |

heavily concentrated in the geographical area under study than it was in the entire State. The data show several distinct patterns of concentration. Agriculture and mining were quite noticeably concentrated in one area (rural farm and rural nonfarm respectively), with the other rural area having, in each case, a moderate concentration as well. This was true primarily because urban employment in these industrial sectors was negligible.

The second pattern was that of construction and manufacturing which were both most highly concentrated in rural nonfarm areas (ranging from 1.3 to 1.5). A minor concentration in rural farm areas and a shortage was characteristic in urban areas. The range of values of the quotients for these industries was much less than in the agriculture and mining sectors.

The third pattern was of moderate concentration in urban areas (quotients around 1.1) followed by moderate shortages in rural nonfarm areas (quotients from .85 to .90) and somewhat greater shortages in rural farm areas (quotients about .65). This pattern was followed almost identically in the transportation, trade, and service sectors.

The final pattern was one of relatively high concentration in urban areas with considerable drop off in both rural areas. In other words, these are industries rather highly concentrated in urban areas. This pattern was that of the finance and public administration sectors.

7. Income. Income data for urban, rural nonfarm, and rural farm areas are analyzed on the level of income, the distribution of income, and the incidence of poverty for the three geographical areas under study.

The data indicate that in purely monetary terms, residents of urban areas were somewhat better off than were rural residents. Mean family income in urban areas (\$11,779) was 36.3% higher than the mean level of rural nonfarm families (\$8,645) and 48.7% higher than the mean level of rural farm families (\$7,920). These differences do not reflect differences in cost of living and patterns of consumption, nor do they reflect the greater incidence of self sufficiency in food presumably found in rural areas. However, data on the incidence of poverty do reflect these differentials to some extent, since the poverty threshold criteria (presented in Table 3 in Chapter 1) do allow for farm-

nonfarm differentials (as well as age and sex of head of household and family size).

Examination of the data in Table 28 show that even adjusting for these differences, the incidence of poverty was much higher in rural areas than in urban areas. Among rural nonfarm families, some 17.3% received income in 1969 less than the poverty level. At 20.2%, this rate was even higher for rural farm families. But in urban areas, it was only 9.1%. The pattern was similar for unrelated individuals (that is, single persons living alone, constituting a one person household; this does not include the institutional population). In the aggregate, poverty was greater among these persons, but the incidence in urban areas of the State (30.5%) was substantially lower than it was in rural nonfarm (55.5%) and rural farm (52.0%) areas.

Although the incidence of poverty was less among the urban population, it would appear that poor families were

Figure 15. Percentage Distribution of Virginia Families by Income and Urban-Rural Residence, Virginia: 1970

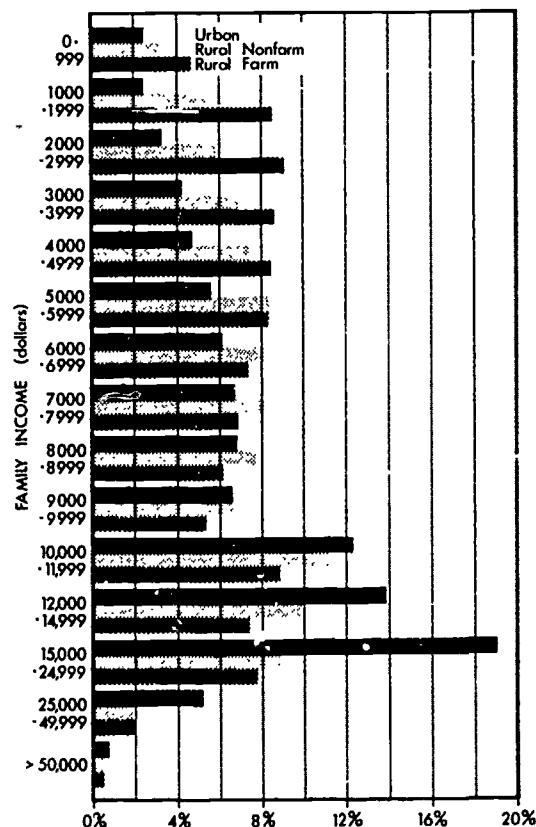


TABLE 29. INCOME DISTRIBUTION OF VIRGINIA FAMILIES, BY URBAN-RURAL RESIDENCE: 1970

| | Urban | Rural Nonfarm | Rural Farm |
|------------------------------------|---------|------------------|---------------|
| Number of Families With Income: | | | |
| Less than \$1,000 | 17,858 | 11,611 | 3,349 |
| \$1,000-\$1,999 | 17,858 | 19,617 | 6,056 |
| \$2,000-\$2,999 | 24,138 | 20,963 | 6,394 |
| \$3,000-\$3,999 | 30,354 | 24,818 | 6,080 |
| \$4,000-\$4,999 | 34,351 | 26,768 | 5,940 |
| \$5,000-\$5,999 | 40,582 | 29,886 | 5,917 |
| \$6,000-\$6,999 | 44,666 | 29,729 | 5,287 |
| \$7,000-\$7,999 | 49,049 | 29,465 | 4,933 |
| \$8,000-\$8,999 | 49,311 | 27,970 | 4,424 |
| \$9,000-\$9,999 | 48,015 | 24,578 | 3,867 |
| \$10,000-\$11,999 | 89,542 | 40,523 | 6,237 |
| \$12,000-\$14,999 | 100,620 | 35,926 | 5,304 |
| \$15,000-\$24,999 | 139,694 | 31,813 | 5,528 |
| \$25,000-\$49,999 | 38,301 | 6,429 | 1,389 |
| \$50,000+ | 5,364 | 1,376 | 376 |
| TOTAL | 729,703 | 361,472 | 71,081 |

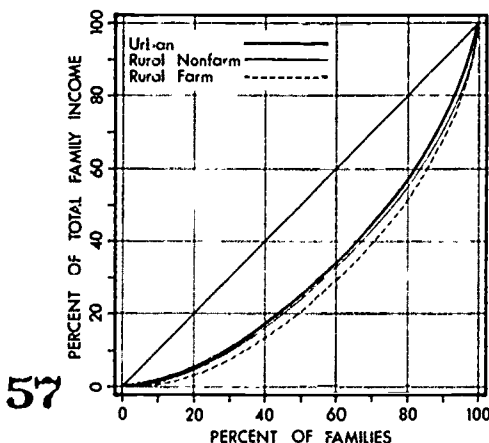
relatively worse off than poor rural families. Mean income of poor urban families would have to increase by 86%, on the average, if all families were to move to the poverty threshold. Among poor rural nonfarm families, this increase would have to be only 68%, on the average, while for poor rural farm families income would have to rise by some 72%. In urban areas, the mean level of income of poor families was only 16.3% of that of all families; for rural nonfarm families, the corresponding percentages are 25.4% and 22.0%, respectively.

The other aspect of income to be considered is the distribution of family income. Table 29 presents this distribution for selected intervals for urban, rural nonfarm, and rural farm families. These data show that a much greater share of rural families received relatively low levels of income than was true of urban families. Only 17.1% of all urban families received less than \$5,000, compared with 28.7% of rural nonfarm and 39.1% of rural farm families. On the other hand, the share of urban families with incomes between \$10,000 and \$14,999 (26.1%) and \$15,000 and over (25.1%) was much higher than the respective shares among either rural nonfarm (21.2 and 11.0%) or rural farm (16.2 and 10.3%) families. The complete percentage distribution of income is shown graphically in Figure 15.

To determine the equality of income distribution by family, a device known

as the Lorenz Curve is customarily used. The Lorenz Curve shows the relationship between percentage of families (or units) and percentage of total income. With perfect equality of income (that is, all families receiving the same amount of income), the resulting curve would be a straight diagonal line. The closer the actual curve is to the diagonal, the more equitable the degree of income. By measuring the area between the curve and the diagonal and dividing this by the total area under the diagonal, an index of income concentration can be calculated.

Figure 16. Lorenz Curves for Distribution of Family Income, by Urban-Rural Residence, Virginia: 1970



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TABLE 30. GEOGRAPHIC COMPOSITION OF VIRGINIA'S METROPOLITAN POPULATION, CLASSIFIED BY URBAN-RURAL RESIDENCE: 1970

| | Total | Central City | Other Urban | Rural Nonfarm | Rural Farm |
|------------------------|-----------|--------------|-------------|---------------|------------|
| Lynchburg SMSA | 123,444 | 54,083 | 18,945 | 41,690 | 8,756 |
| Lynchburg City | 54,083 | 54,083 | | | |
| Amherst County | 26,072 | | 7,758 | 13,733 | 4,581 |
| Campbell County | 43,319 | | 11,187 | 27,957 | 4,175 |
| Newport News-Hampton | 292,159 | 258,956 | 7,843 | 23,741 | 1,619 |
| Hampton City | 120,779 | 120,779 | | | |
| Newport News City | 138,177 | 138,177 | | | |
| York County | 33,203 | | 7,843 | 23,741 | 1,619 |
| Norfolk-Virginia Beach | 680,600 | 418,514 | 249,216 | 10,499 | 1,471 |
| Chesapeake City | 99,580 | | 82,641 | 5,745 | 1,194 |
| Norfolk City | 307,951 | 307,951 | | | |
| Portsmouth City | 110,963 | 110,963 | | | |
| Virginia Beach City | 172,106 | | 166,575 | 4,754 | 777 |
| Petersburg-Colonial | | | | | |
| Heights-Hopewell | 128,809 | 51,200 | 45,422 | 27,050 | 5,137 |
| Colonial Heights City | 15,097 | 15,097 | | | |
| Petersburg City | 36,103 | 36,103 | | | |
| Hopewell City | 23,471 | | 23,471 | | |
| Dinwiddie County | 25,046 | | 9,516 | 12,025 | 3,505 |
| Prince George County | 22,082 | | 12,435 | 14,025 | 1,632 |
| Richmond SMSA | 518,319 | 249,621 | 179,427 | 78,676 | 10,595 |
| Richmond City | 249,621 | 249,621 | | | |
| Chesterfield County | 76,855 | | 41,807 | 32,613 | 2,436 |
| Hanover County | 1,479 | | 8,295 | 23,068 | 6,117 |
| Henrico County | 154,364 | | 129,327 | 22,995 | 2,042 |
| Roanoke SMSA | 181,436 | 92,115 | 64,506 | 23,449 | 1,366 |
| Roanoke City | 92,115 | 92,115 | | | |
| Salem City | 21,982 | | 21,982 | | |
| Roanoke County | 67,339 | | 42,524 | 23,449 | 1,366 |
| Washington SMSA | | | | | |
| (Virginia Portion) | 921,237 | | 808,864 | 104,632 | 7,741 |
| Arlington County | 174,284 | | 174,284 | | |
| Fairfax County | 455,021 | | 407,901 | 44,269 | 2,851 |
| Loudoun County | 37,150 | | 10,024 | 24,931 | 2,195 |
| Prince William County | 111,102 | | 72,975 | 35,432 | 2,695 |
| Alexandria City | 110,938 | | 110,938 | | |
| Fairfax City | 21,970 | | 21,970 | | |
| Falls Church City | 10,772 | | 10,772 | | |
| Total | 2,846,034 | 1,124,889 | 1,374,223 | 309,737 | 37,185 |

As the value of the index approaches 1.0, the degree of inequality in the distribution of income increases.

Lorenz curves for Virginia's urban, rural farm, and rural nonfarm families are shown in Figure 16. The curves for the urban and rural nonfarm populations are practically identical, as are the indices of income concentration in these areas--.366 for urban families and .365 for rural nonfarm families. However, the curve for rural farm families shows that the degree of inequality of income distribution in this group was somewhat greater. This is confirmed by the relatively high index of income concentration, .423. Thus, while there was an uneven distribution of income in each area (a perfectly even income distribution is possible only in theory), the degree of inequality was somewhat greater among rural farm families than among either urban or rural nonfarm families.

B. Metropolitan-Nonmetropolitan Comparisons

This section is designed to augment the foregoing urban-rural analysis. Metropolitan areas are rather heavily urban--in 1970 total metropolitan population was 2,846,034 (or 61.2% of the State's population). Of this, 1,124,889 (39.5% of all metropolitan population) were located in central cities; 1,374,223 (48.3%) lived in other urban portions of metropolitan areas; 309,737 (10.9%) lived in rural nonfarm areas; and the remaining 37,185 (1.3%) lived in rural farm areas within metropolitan areas. Table 30 lists the components of Virginia's metropolitan areas and classifies the population as central city, other urban, rural nonfarm, or rural farm.

Those 1,802,460 Virginians not living in metropolitan areas comprised the nonmetropolitan population. Of

these persons, 23.9% lived in nonmetropolitan urban areas, 63.3% lived in rural nonfarm areas, and 12.8% lived in rural farm areas.*

The characteristics of the metropolitan-nonmetropolitan populations will be discussed in somewhat more abbreviated fashion than the urban-rural analyses. Table 31 presents selected indicators of mobility and educational achievement for the metropolitan-nonmetropolitan populations.

1. Demographic Characteristics and Mobility. Briefly, the data show that the metropolitan population of Virginia in 1970 was younger and more heavily male than was the nonmetropolitan population. Only about half of the residents of metropolitan areas were born in Virginia, compared with over four-fifths of nonmetropolitan residents. The population was also much more mobile than was the nonmetropolitan population. More than 56% of the metropolitan population changed residence (moved) between 1965 and 1970, and more than half of the movers (53.1%) changed their county of residence (migrated). In turn, a majority of migrants (59.3%) moved into Virginia from another state--44.4% came from other Southern states. On the other hand, only 39.2% of nonmetropolitan residents moved in the period from 1965 to 1970. Among this relatively small groups of movers, there were also relatively fewer migrants (40.3%), and among migrants, in turn, there was a relatively small influx from other states (38.3%). Additionally, interstate migrants to

nonmetropolitan areas in Virginia were somewhat more likely to have originated in a Southern state--only 39.6% of migrants to these areas came from Northeastern, North Central, or Western states.

2. Education. The level of educational attainment was also substantially higher among residents of metropolitan areas. Median years of school completed for these persons (12.2 years) was 27% higher than the 9.6 years recorded for nonmetropolitan residents. Almost half of the latter group (45.9%) had no more than an elementary school education, and only about 14% had one or more years of post-secondary education. By way of contrast, only about one-fourth of metropolitan area residents had completed eight or fewer years of school; the proportion with one or more years of college education was slightly more than one-fourth (28.3%).

3. Labor Force and Employment. Table 32 presents a summary of labor

*The complete census count was used to make these tabulations, although the rural farm-rural nonfarm distinction is estimated on the basis of sample (fourth count) data. Due to small discrepancies between the complete count and sample data, the totals which appear in some of the following tables will not necessarily agree with the numbers presented in the text. The overall differences are so small that they are of no importance.

TABLE 31. MOBILITY AND EDUCATIONAL CHARACTERISTICS OF VIRGINIA, BY METROPOLITAN-NONMETROPOLITAN RESIDENCE: 1970

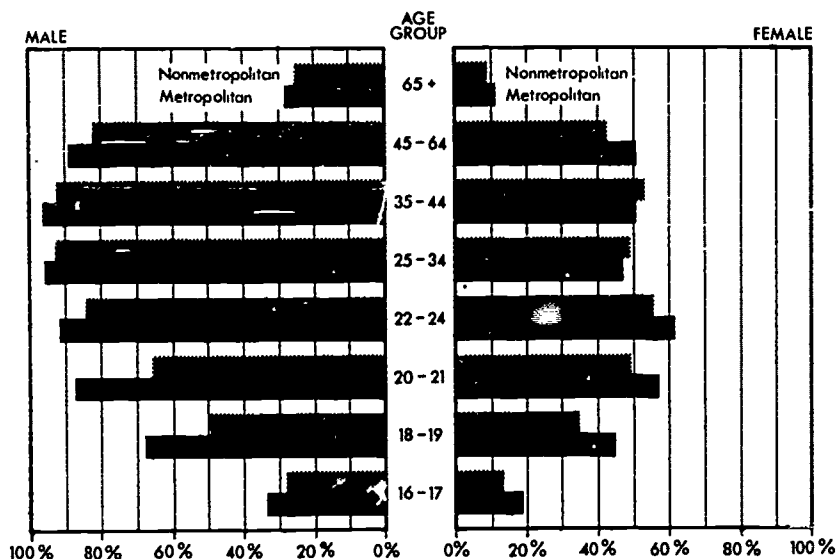
| | Metropolitan | Nonmetropolitan |
|---|--------------|-----------------|
| Total Population | 2,846,034 | 1,802,460 |
| Median Age | 26.0 | 28.4 |
| Male-Female Ratio | .987 | .959 |
| Percent Born in Virginia | 55.5 | 84.1 |
| Total Population, 5 Years Old and Over | 2,600,775 | 1,656,859 |
| Movers | 1,466,106 | 648,738 |
| Migrants | 778,452 | 261,541 |
| Interstate | 461,637 | 100,198 |
| Percent From Northeast | 23.0 | 19.6 |
| Percent From North Central | 16.9 | 13.0 |
| Percent From South | 44.4 | 60.4 |
| Percent From West | 15.7 | 7.0 |
| Total Population Aged 25 and Over | 1,467,547 | 978,535 |
| Percent With 0-8 Years of School | 23.1 | 45.9 |
| Percent With 9-11 Years of School | 20.1 | 19.9 |
| Percent With 12 Years of School | 28.5 | 20.3 |
| Percent With 13+ Years of School | 28.3 | 13.9 |
| Median Number of School Years Completed | 12.2 | 9.6 |

force characteristics for Virginia's metropolitan and nonmetropolitan areas. The overall rate of labor force participation among individuals aged 16 and over (including military personnel) was somewhat higher in metropolitan areas (63.3%) than nonmetropolitan areas (55.2%), although part of the difference was due to the much larger concentration of military personnel in the metropolitan

females comprised a relatively smaller share of the metropolitan labor force than they are of the nonmetropolitan labor force, even though female labor force participation rates were higher in metropolitan areas. Complete labor force participation rates for each sex are given in Figure 17.

The rate of unemployment, which is

Figure 17. Labor Force Participation Rates, by Age, Sex, and Metropolitan-Nonmetropolitan Residence: 1970



areas. Considering the civilian labor force as a percentage of the population aged 16 and over, the rate of labor force participation is 54.68% in metropolitan areas and 54.75% in nonmetropolitan areas--in other words the greater labor force participation in metropolitan areas is due exclusively to the fact that 97% of the military personnel in the state are located in metropolitan areas.

Making a similar correction separately by sex, we find that 65.6% of metropolitan males and 44.1% of metropolitan females were in the civilian labor force. In nonmetropolitan areas, the corresponding rates of civilian labor force participation were 71.5% and 39.2%, respectively. It is also because of the high proportion of military personnel in metropolitan areas (and the high proportion of military personnel who are male--97.9%) that

measured only for the civilian labor force, was considerably lower for metropolitan area residents. Only 2.67% of the civilian labor force residing in metropolitan areas was unemployed (out of work and actively seeking work) at the time of the Census (April 1, 1970), compared with 3.44% of the nonmetropolitan civilian labor force. This was true for each sex, although unemployment among males was lower than unemployment among females.

4. Occupational and Industrial Composition. In terms of the occupational composition of the labor force, the metropolitan labor force was primarily engaged in white collar occupations (professional, managerial, clerical, and sales), with somewhat smaller shares of employment in blue collar (craftsmen, operatives, and laborers) and service occupations. Employment in agricultural occupations (farmers and farm laborers) was extremely

TABLE 32. EMPLOYMENT, LABOR FORCE, OCCUPATIONAL AND INDUSTRIAL CHARACTERISTICS OF VIRGINIA, BY METROPOLITAN-NONMETROPOLITAN RESIDENCE: 1970

| | Metropolitan | Nonmetropolitan |
|--|--------------|-----------------|
| Population Aged 16 and Over | 1,967,794 | 1,261,607 |
| In Labor Force | 1,246,298 | 696,071 |
| Labor Force Participation Rate | 63.3% | 55.2% |
| Armed Forces | 170,300 | 5,329 |
| Civilian Labor Force | 1,075,998 | 690,742 |
| Employed | 1,047,286 | 666,964 |
| Unemployed Rate | 2.67 | 3.44 |
| Percent of Labor Force Female | 35.7 | 36.9 |
| Percent of Civilian Labor Force Female | 41.0 | 37.1 |
| Percent of Employment: | | |
| White Collar Occupations | 58.4 | 34.2 |
| Blue Collar Occupations | 28.8 | 47.9 |
| Agricultural | 0.7 | 5.9 |
| Service | 12.1 | 12.0 |
| Percent of Employment in: | | |
| Agricultural Industries | 1.1 | 6.9 |
| Mining | 0.1 | 2.3 |
| Construction | 6.8 | 8.4 |
| Durable Goods Manufacturing | 8.5 | 12.1 |
| Nondurable Goods Manufacturing | 8.0 | 19.8 |
| Transportation, Communication, Utilities | 7.7 | 5.3 |
| Wholesale and Retail Trade | 19.2 | 16.0 |
| Banking and Financial Services | 5.7 | 2.4 |
| Other Services | 27.1 | 22.6 |
| Public Administration | 16.0 | 4.2 |

TABLE 33. INCOME DISTRIBUTION AND INCIDENCE OF POVERTY, VIRGINIA FAMILIES, BY METROPOLITAN-NONMETROPOLITAN RESIDENCE: 1970

| | Metropolitan | Nonmetropolitan |
|--------------------------|--------------|-----------------|
| Number of Families | 704,532 | 457,724 |
| Income Level | | |
| Less Than \$1,000 | 17,357 | 15,461 |
| \$1,000-\$1,999 | 15,917 | 27,614 |
| \$2,000-\$2,999 | 21,791 | 29,704 |
| \$3,000-\$3,999 | 27,156 | 34,096 |
| \$4,000-\$4,999 | 31,236 | 35,823 |
| \$5,000-\$5,999 | 37,351 | 39,034 |
| \$6,000-\$6,999 | 40,989 | 38,693 |
| \$7,000-\$7,999 | 46,012 | 37,435 |
| \$8,000-\$8,999 | 46,734 | 34,971 |
| \$9,000-\$9,999 | 45,728 | 30,732 |
| \$10,000-\$11,999 | 87,245 | 49,057 |
| \$12,000-\$14,999 | 100,541 | 41,309 |
| \$15,000-\$24,999 | 142,258 | 34,777 |
| \$25,000-\$49,999 | 38,803 | 7,316 |
| \$50,000+ | 5,414 | 1,702 |
| Median Income | \$12,076 | \$8,247 |
| Number of Families Below | | |
| Poverty Line | 61,586 | 81,419 |
| Mean Income | \$1,914 | \$2,110 |
| Mean Income Deficit | \$1,697 | \$1,434 |
| Deficit-Income Ratio | .887 | .680 |

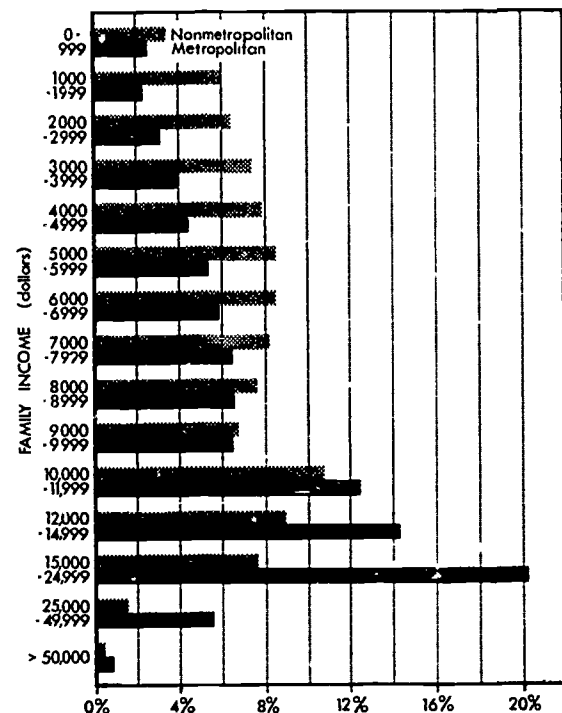
small, as expected. Nonmetropolitan workers were engaged in blue collar and agricultural occupations to a considerably greater extent, in white collar occupations to a considerably lesser extent, and in about the same proportion for service occupations.

There were considerable differences in the industrial composition of the metropolitan and nonmetropolitan labor forces. Briefly, the metropolitan labor force was engaged to a relatively greater extent than the nonmetropolitan labor force in the following industrial groups: transportation, communication, and utilities; wholesale and retail trade; banking and other financial services; other services; and public administration. For the other five industrial groups (agriculture, forestry, and fisheries; mining; construction; and durable and nondurable goods manufacturing), employment was relatively greater among the nonmetropolitan labor force.

5. **Income.** The final area to be analyzed is income. A summary of income statistics for metropolitan and nonmetropolitan areas is presented below in Table 33. The data show that the proportion of families having a low income (less than \$5,000 per year) was substantially higher among nonmetropolitan families (31.2%) than it was among metropolitan families (16.1%). Additionally, the proportion of higher income families (\$15,000 or more) was also considerably higher in metropolitan areas (26.5%) than in nonmetropolitan areas (9.6%). These differences were reflected in the higher level of average income found among metropolitan families (\$12,076) compared with nonmetropolitan families (\$8,247). The income distribution of these groups is presented graphically in Figure 18.

Differences in income level cannot necessarily be equated with differences in economic well-being. Again, differences in cost of living and life style have to be considered. Data which show the incidence of poverty do correct for these omissions to some extent. As the data in Table 33 show, the incidence of poverty was considerably greater among nonmetropolitan residents (17.8% of all families and 52.1% of all unrelated individuals) than it was among metropolitan residents (8.7% of families and 28.9% of unrelated individuals). However, the relative degree of poverty appears to be greater in

Figure 18. Percentage Distribution of Virginia Families by Income and Metropolitan-Nonmetropolitan Residence: 1970



metropolitan areas--that is, poor residents of metropolitan areas are relatively and absolutely poorer than poor persons residing in nonmetropolitan areas. The mean income among poor metropolitan families was \$1,914, or 15.8% of the mean level of income for all metropolitan families. For these families to move to the poverty threshold, they would require, on the average, an additional \$1,697 or 88.7% of their average earnings. The mean level of family income among nonmetropolitan poor families was greater than that of poor metropolitan families, both in an absolute sense (\$2,110 vs. \$1,914) and a relative sense. (The \$2,110 mean income level of poor nonmetropolitan families is 25.6% of the overall nonmetropolitan mean, and the amount that would be needed to move these poor families to the poverty threshold is \$1,434 or 68.0% of mean income among poor nonmetropolitan families.) Thus, while the poor comprise a larger share of the nonmetropolitan population, the poor in these areas appear to be relatively better off than the metropolitan poor.

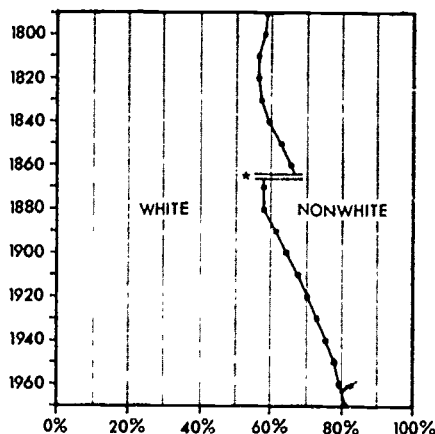
Chapter VIII.

White-Nonwhite Comparisons

In this chapter, analysis turns to socioeconomic differences considered as a function of race. Most of the analysis will be devoted to whites and blacks, the two racial groups which comprise the vast majority of Virginia's population. The end of this chapter will be devoted to a brief analysis exploring the socioeconomic characteristics of two smaller groups, the nonblack-nonwhite population and persons of Spanish language (which is not, strictly speaking a separate racial group).

The 1970 Census of Population shows that of Virginia's 4,648,494 persons, some 3,761,514 (80.9%) were white, 861,368 (18.5%) were black, and 25,612 (0.6%) were other races. This latter group, in turn, is broken down as follows: American Indian, 4,853; Japanese, 3,500; Chinese, 2,805; Filipino, 7,496; and all other, 6,958.* The number of "persons of Spanish language" totaled 48,742. The Bureau of the Census includes as persons of Spanish language those "...persons of Spanish mother tongue and all other persons in families in which the head or wife reported Spanish as his or her mother tongue."**

Figure 19. Percentage Distribution of Virginia's Population, by Race: 1790-1970



*INCLUDES WEST VIRGINIA FROM 1790 TO 1860

A. White-Black Comparisons

While about 81% of the state's population was white in 1970, whites were relatively more concentrated in urban areas--81.7% of the population in urban areas was white, compared with 79.8% in rural areas. In other words, 63.6% of the white population lived in urban portions of the state, compared with 60.1% of the black population.

From 1960 to 1970, the white population of Virginia increased by some 19.7%, while the black population rose by only 5.5%. The difference was the result of the high rate of immigration among whites during the intercensal period, and the moderately high rate of outmigration of blacks during the same period. The high volume of white immigration during the 1960's and the continued outflow of blacks strengthens a trend that has been a more or less persistent pattern in the state--the proportion of the population which is white has been increasing.

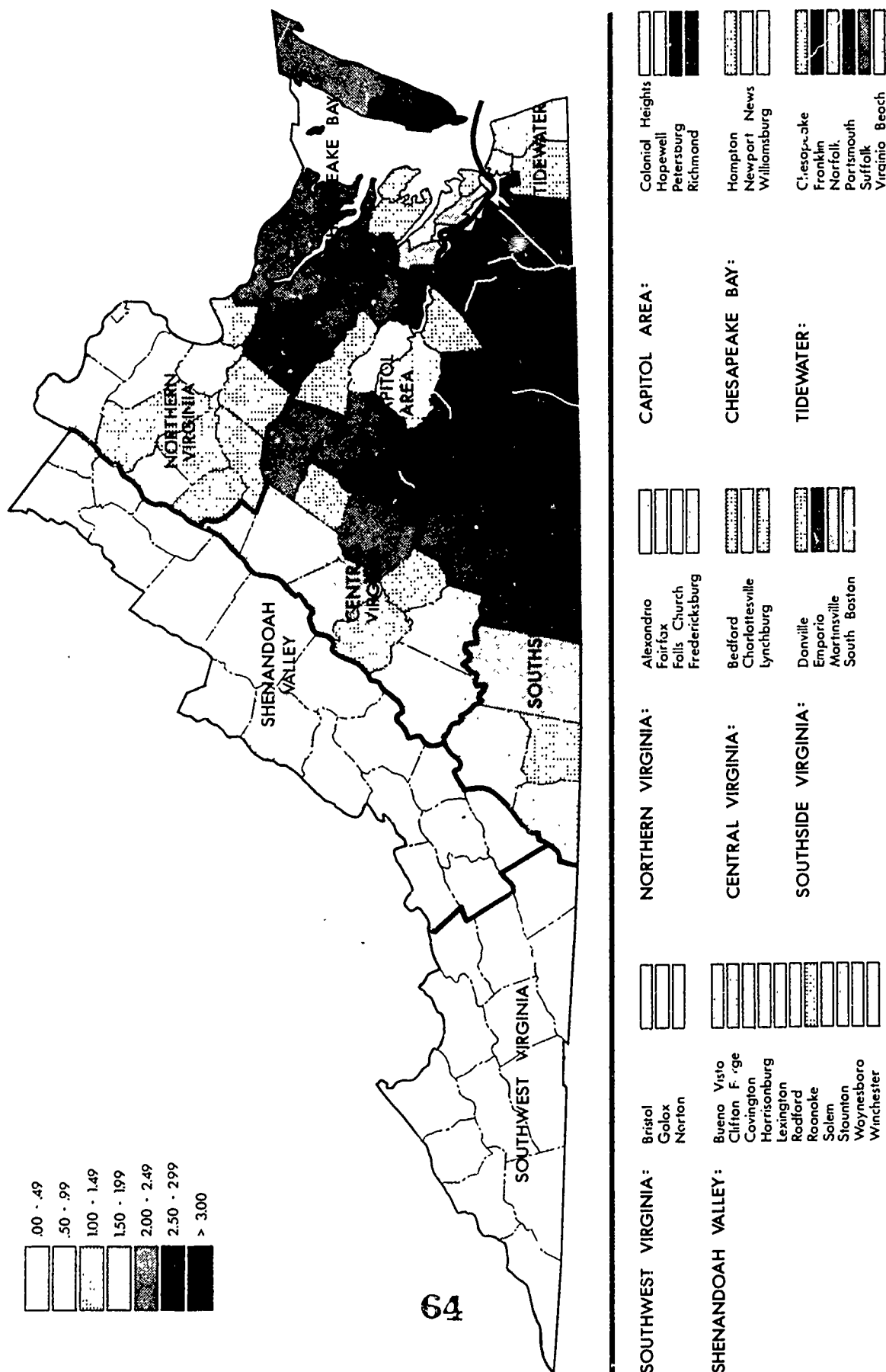
As Figure 19 shows, the first census of the United States, taken in 1790, showed that about two-fifths of the population of Virginia was nonwhite. The share increased through 1820, then gradually dropped through 1860. The increase between 1860 and 1870 reflects the separation of western counties into the state of West Virginia in 1863. From 1870 to 1970, there has been a consistent decline in the relative number of nonwhite Virginians.

1. Demographic Characteristics.
In terms of demographic characteristics in 1970, the white population was, on the average, somewhat older than the black population--median age among whites

*These are complete count totals and may differ slightly from the totals based on sample data used to analyze socioeconomic characteristics.

63 **U.S. Bureau of the Census, General Social and Economic Characteristics, Virginia (Washington, 1972), p. App-7.

FIGURE 20. INDEX OF CONCENTRATION OF BLACK POPULATION IN VIRGINIA CITIES AND COUNTIES: 1970



was 27.6 years versus 23.1 years for blacks.* In terms of the sex composition of the state, a greater proportion of whites were males (49.6%) than was true of blacks (48.6%).

The geographic composition of the black population was somewhat different from that of the state as a whole. Blacks were located in disproportionately low numbers in the portions of the state located west of the Blue Ridge Mountains and in Northern Virginia. In Southside, Northern Neck and Eastern Shore areas, the proportion of blacks was 40% or more.

Figure 20 shows the index of the black population for each city and county in the state. This index is computed by dividing the percentage of the state's black population living in the area by the percentage of the total population of the state living in the area. A value greater than 1.0 indicates a higher concentration of blacks in the area than in the state as a whole. The highest concentration was found in Charles City County, where blacks are four times as numerous as they were in the state as a whole (in relative terms). The lowest concentration was found in the nearby city of Colonial Heights--here, the index value was .003.

2. **Mobility.** Mobility characteristics for the white and black populations of the state are presented in Table 34. Remembering that the data are presented by place of residence, it

is not surprising to see that the white population of the state was somewhat more mobile than the black population. This was a natural consequence of immigration of whites to Virginia and outmigration of blacks from Virginia. Thus, while about two-thirds of white Virginians were born in the Commonwealth (64.6%), somewhat over four-fifths of all black Virginians (85.6%) were born in the state.

Of those Virginia residents born in the United States outside of Virginia, 82.7% of the blacks and 52.4% of the whites were born in other Southern states. For blacks, 11.8% were born in Northeastern states, 3.5% were born in North Central states, and 1.9% were born in Western states. Although the rank order was the same for whites, the relative proportions are quite different: 24.0% born in Northeast, 16.5% in North Central area, and 7.1% in the West.

In terms of recent mobility (from 1965 to 1970), the proportion of movers among whites aged 5 and over (51.2%)

*The age composition of the races also varied to a considerable extent--some 45.2% of the black population was under the age of 20, compared with 36.5% of the white population. On the other end of the age scale, only 7.6% of the black population was age 65 and over, compared with 8.0% of the white population.

TABLE 34. MOBILITY CHARACTERISTICS OF VIRGINIA, BY RACE: 1970

| | White | Black |
|----------------------------------|-----------|---------|
| Native Population | 3,702,996 | 859,055 |
| Born in Virginia | 2,212,791 | 689,247 |
| Born in Another State | 1,309,163 | 123,818 |
| Born in Northeast | 314,141 | 14,652 |
| Born in North Central | 216,580 | 4,325 |
| Born in South | 685,788 | 102,433 |
| Born in West | 92,654 | 2,408 |
| Other and Not Reported | 181,042 | 45,990 |
| Population Aged 5 Years and Over | 3,461,214 | 776,618 |
| Residence in 1965 | | |
| Same House | 1,690,300 | 447,871 |
| Different House | 1,512,574 | 273,768 |
| Same County | 568,340 | 183,511 |
| Different County | 944,234 | 90,257 |
| Same State | 423,441 | 53,665 |
| Different State | 520,793 | 36,592 |
| Northeast | 115,600 | 9,493 |
| North Central | 87,628 | 2,721 |
| South | 242,177 | 22,004 |
| West | 75,388 | 2,374 |
| Other and Not Reported | 207,392 | 52,609 |

TABLE 35. EDUCATIONAL ATTAINMENT OF VIRGINIA'S POPULATION,
BY RACE: 1970

| | White | Black |
|-----------------------------------|-----------|---------|
| Total Population Aged 25 and Over | 2,029,501 | 404,829 |
| Years of School Completed | | |
| 0 | 24,180 | 15,255 |
| 1-4 | 88,150 | 59,108 |
| 5-6 | 141,546 | 60,963 |
| 7 | 165,460 | 47,077 |
| 8 | 148,152 | 36,208 |
| 9-11 | 395,894 | 91,063 |
| 12 | 553,411 | 60,430 |
| 13-15 | 231,511 | 17,663 |
| 16 | 164,695 | 10,827 |
| 17+ | 116,502 | 6,235 |
| Median | 12.1 | 8.5 |

was much higher than that for blacks of the same age group (42.5%). (A mover is defined as a person who has changed his or her permanent residence in the period under question.) Considering only persons who migrate (that is, those whose move involved movement across city or county boundaries), 62.4% of white movers migrated, compared with only 33.0% of black movers. Additionally, more than half of all white migrants (55.2%) moved to Virginia from another state, compared with only 40.5% of black migrants. More than half of the black immigrants (60.1%) originated in other Southern states, compared with 46.5% of white immigrants. Black immigrants also tended to originate in the Northeast (25.9%) to a greater extent than did white immigrants (22.2%), but to a considerably lesser extent from North Central (7.4% of blacks, 16.8% of whites) and Western states (6.5 and 14.5%, respectively).

3. Education. For persons aged 25 and over, there was a significant gap in the average educational attainment of white and black Virginians. The median number of school years completed was 12.1 for whites and 8.5 for blacks. The data in Table 35 show that the percentage of blacks with no more than an elementary school education (54.0%) was almost twice as high as the comparable statistic for the white population (28.0%). Moreover the relative number of blacks with at least one year of post-secondary education was only about one-third of the relative number of whites (8.6% of blacks and 25.3% of whites were at this level of educational attainment).

Despite continuing efforts of local government to improve the quality of educational services to all Virginians,

the apparent gap in education has grown wider in recent decades. In 1940 whites had completed 2.8 more years of school than did nonwhites (who were overwhelmingly black). In 1950, this increased to 3.2 years and in 1960 to 3.6 years. This gap remained constant between 1960 and 1970. The gap is not likely to be narrowed if the school enrollment rates of 1970 continue. As Figure 21 shows, rates of enrollment were higher among whites at all age levels.

4. Employment and Labor Force. In terms of overall labor force participation

Figure 21. Percent of Population Enrolled in School, by Age and Race, Virginia: 1970

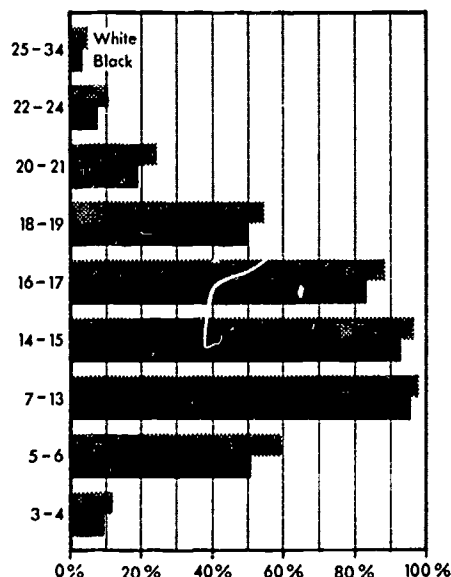


TABLE 36. EMPLOYMENT AND LABOR FORCE CHARACTERISTICS OF VIRGINIA,
BY RACE: 1970

| | White | Black |
|--------------------------------|-----------|---------|
| Male Aged 16 and Over | 1,305,677 | 261,332 |
| Labor Force | 1,049,209 | 185,281 |
| Armed Forces | 154,180 | 14,115 |
| Civilian Labor Force | 895,029 | 171,166 |
| Employed | 877,398 | 164,428 |
| Percent Unemployed | 2.0 | 3.9 |
| Female Aged 16 and Over | 1,361,191 | 285,255 |
| Labor Force | 563,980 | 133,794 |
| Armed Forces | 3,292 | 383 |
| Civilian Labor Force | 560,688 | 133,411 |
| Employed | 542,377 | 123,837 |
| Percent Unemployed | 3.3 | 7.2 |
| Labor Force Participation Rate | | |
| For Women: | | |
| With Children Aged 0-5 | 30.5% | 49.7% |
| With Children Aged 6-17 | | |
| (And No Children Aged 0-5) | 48.2% | 61.4% |
| With No Children Aged 0-17 | 42.6% | 41.3% |

TABLE 37. OCCUPATIONAL DISTRIBUTION OF THE EMPLOYED LABOR
FORCE OF VIRGINIA, BY RACE: 1970

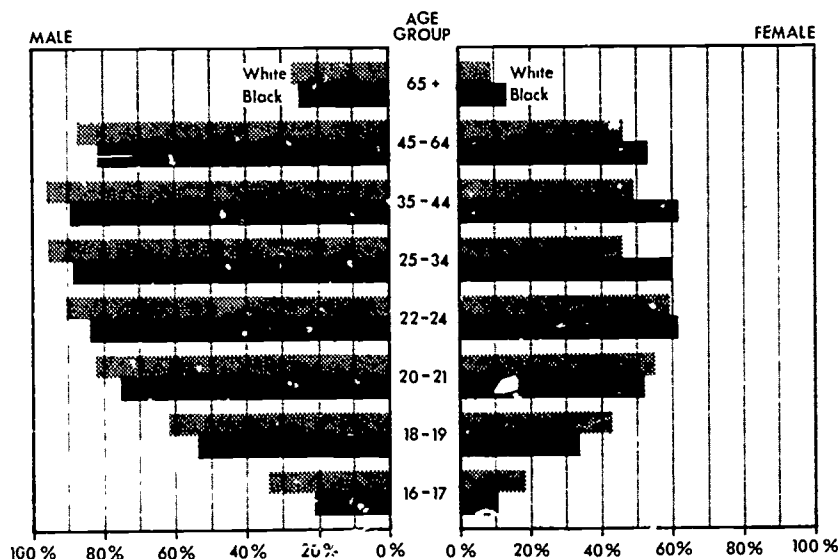
| | White | Black |
|-----------------------------------|-----------|---------|
| Professional | 253,108 | 19,836 |
| Elementary and Secondary Teachers | 47,985 | 9,365 |
| Managerial | 140,482 | 5,330 |
| Sales | 106,050 | 5,295 |
| Clerical | 280,295 | 25,784 |
| Total White Collar | 779,935 | 56,245 |
| Craftsmen | 214,939 | 28,854 |
| Operatives | 171,067 | 53,005 |
| Transport Operatives | 49,728 | 19,664 |
| Laborers | 48,589 | 33,815 |
| Total Blue Collar | 484,323 | 135,338 |
| Farmers | 22,333 | 3,006 |
| Farm Laborers | 12,919 | 7,815 |
| Total Agricultural | 35,252 | 10,821 |
| Service | 110,420 | 57,659 |
| Private Household | 9,845 | 28,202 |
| Total Service | 120,265 | 85,861 |
| Total | 1,419,775 | 288,265 |

(that is, including military), the rate among whites aged 16 and over was somewhat higher than for blacks. Of the 2,666,868 whites aged 16 or more years, some 1,613,189, or 60.5% were in the labor force in 1970. For the 546,587 blacks in this age group, some 319,075 or 58.4%, were in the labor force. The overall labor force participation rate was somewhat higher for white males (80.4%) than for black males (70.9%). Part of this difference was due to the

whites through the age of 21; thereafter they were higher for blacks. Among the male population, labor force participation rates were higher for whites at all ages.

The rate of unemployment was substantially higher for blacks of both sexes than it was for whites. Among all blacks in the civilian labor force, the rate of unemployment was 5.4%--3.9% among males and 7.2% among females. For the white civilian labor force, the

Figure 22. Labor Force Participation Rates, by Age and Sex, Virginia: 1970



relatively larger number of whites being found in the armed forces (14.7% of the white male labor force was military, compared with 7.6% of the black male labor force). Adjusting for this difference, the white male civilian labor force participation rate was 68.5% and the black male civilian labor force participation rate was 65.5%. (See Table 36.)

Among the female population, the labor force participation rate of blacks was somewhat higher (46.9%) than that of whites (41.4%). The rate of participation was notably higher among black women with dependent children at home than it was for white women. On the other hand, for women with no dependent children, the rate was slightly higher for white women. Examination of the data in Figure 22 show that for women, labor force participation rates were higher for

overall rate of unemployment was only 2.5%--2.0% for males and 3.3% for females. While white males accounted for over half of the state's civilian labor force in 1970 (50.8%), they accounted for only about a third (33.7%) of the unemployed. Black women, on the other hand, accounted for only 7.6% of the civilian labor force, but 18.3% of the unemployed. For white women, these data were 31.9% and 35.0%, respectively; and for black males, they were 9.7% and 12.9%, respectively.

5. Occupational Distribution. As would probably be expected from the preceding analyses of educational attainment and labor force status, the occupational distributions of the white and black labor force in the state varied to a considerable extent. As the data in Table 37 indicate, over half of the employed whites in the labor force were engaged in white collar occupations (54.9%), and nearly one-

third (32.5%) of all these white collar workers were engaged in occupations classified as professional. Among employed blacks, on the other hand, only 19.5%, or about one-fifth, were engaged in professional occupations. Interestingly, a higher proportion of black white collar workers were engaged in professional occupations (35.3%) than white. This was probably due to the fairly high proportion of elementary and secondary school teachers in the black labor force. Nearly half of all black professionals (47.2%) taught at the elementary or secondary level. This was the only individual white collar occupation where blacks comprised about the same share of employment as they did for the entire employed labor force (blacks are 16.3% of elementary and secondary teachers, and 16.8% of the employed labor force).

A greater share of blacks were employed in blue collar (46.9%), agricultural (3.8%), and service (29.8%) occupations than was true among employed whites (34.1%, 2.5%, and 8.5%, respectively). Considering the entire range of occupations (presented in Table 12), blacks were employed to a relatively greater extent than whites in the following occupations: operatives in manufacturing and non-manufacturing industries; truck drivers; other transport operatives; construction laborers; freight, stock, and material handlers; other laborers; farm laborers; cleaning service workers; food service workers; health service workers; and private household workers. In the latter sector, blacks comprised 73.8% of all employees which was the highest for any single sector. On the other hand, only 1.1% of all engineers, 3.8% of physicians and dentists, and 3.6% of all managers were blacks.

As noted earlier, women comprised a significantly larger portion of the black labor force (43.0%) than the white labor force (38.2%). While women in general were more heavily concentrated in white collar occupations than were men (61.1% versus 41.2%), they comprised an especially large portion of clerical workers (74.0%). This was also generally true of blacks, although possibly to a greater extent--58.4% of all blacks engaged in white collar occupations were women, compared with 48.0% among whites engaged in white collar occupations. Women comprised 65.5% of all blacks engaged in professional occupations and nearly 80% of all black elementary and secondary teachers. On the other hand, women comprised only 38.6% of all whites engaged in professional occupations and 78% of

all white elementary and secondary teachers.

6. Industrial Composition. In reference to the industrial composition of the labor force (Table 38), there were considerably different patterns of employment for the white and the black members of the labor force. The bulk of the white work force (54.6%) was concentrated in trade, services, and public administration--18.9% of the labor force was engaged in wholesale and retail trade, 25.4% in services, and 12.3% in public administration. Black workers were engaged in the provision of services to a much greater extent than were whites (34.9% of the black labor force), but to a considerably lesser extent in trade (13.4%) and public administration (6.7%). Among other industrial groups, blacks were relatively more concentrated in manufacturing (25.5% of the black labor force versus 21.9% of the white labor force) and agriculture (4.6% of blacks and 3.1% of whites), but relatively less concentrated in mining (0.3% and 1.1%), construction (7.0% and 7.5%), and transportation, communication, and utilities (5.9% and 6.9%).

In the aggregate, blacks comprised 16.8% of Virginia's labor force. They comprised a greater share of the labor force in the following industries: agriculture, durable goods manufacturing (particularly furniture, primary metals, and transportation equipment manufacturing), trucking, utilities, eating and drinking places, and services (most particularly, private households, other personal services, hospitals, and education). On the other hand, blacks were employed in relatively small numbers in mining, nonelectrical machinery manufacturers, printing, communications, general merchandise and motor vehicle retailing, banking, insurance and real estate, miscellaneous educational services, professional services, and public administration.

7. Income. The final area of analysis for white-black differentials is income. The level of income for white families was substantially greater than for black families. Furthermore, since average family size was smaller among white families (3.4 persons) than among black families (4.2 persons), the observed differences in family income assume even greater significance. As the data in Table 39 show, the mean level of income for white families (\$11,321) was about 73% greater than that of black families (\$6,547). Due to the difference in average family size, mean income per

family member among whites (\$3,288) was more than twice as high as was the level for blacks (\$1,550).

Over two-fifths of black families (42.6%) received income less than \$5,000 compared with only 18.2% of white families. An additional 38.6% of black families received income between \$5,000 and \$9,999. All told, 81.2% of black

families received less than \$10,000 in 1969. Among white families, the comparable share was 51.6%. Only 5.0% of black families received over \$15,000 in income, compared with 22.6% of white families. (See Figure 23.)

The incidence of poverty was significantly greater among blacks. Although the number of poor white

TABLE 38. INDUSTRIAL COMPOSITION OF THE EMPLOYED LABOR FORCE OF VIRGINIA, BY RACE: 1970

| | White | Black | Percent Black |
|--|-----------|---------|---------------|
| Agriculture, Forestry, Fisheries | 43,887 | 13,239 | 23.1 |
| Mining | 16,255 | 808 | 4.7 |
| Construction | 106,510 | 20,046 | 15.8 |
| Durable Goods Manufacturing | 132,870 | 35,653 | 21.1 |
| Furniture | 29,517 | 14,404 | 32.7 |
| Primary Metals | 6,855 | 2,092 | 23.3 |
| Fabricated Metals | 14,778 | 1,725 | 10.4 |
| Nonelectrical Machinery | 10,581 | 894 | 7.8 |
| Electrical Machinery | 23,019 | 3,009 | 11.5 |
| Transportation Equipment | 29,415 | 8,488 | 22.3 |
| Other | 18,705 | 5,041 | 21.1 |
| Nondurable Goods Manufacturing | 176,846 | 37,829 | 17.6 |
| Food | 18,958 | 8,154 | 30.0 |
| Textiles | 68,702 | 11,969 | 14.8 |
| Printing | 19,334 | 1,491 | 7.1 |
| Chemicals | 30,410 | 3,918 | 11.4 |
| Other | 39,442 | 12,297 | 23.7 |
| Transportation, Communications, Utilities | 98,550 | 17,090 | 14.7 |
| Railroads and Railway Express | 16,506 | 2,509 | 13.2 |
| Trucking and Warehousing | 17,736 | 4,414 | 19.9 |
| Other Transportation | 22,112 | 4,178 | 15.8 |
| Communications | 22,384 | 1,507 | 6.3 |
| Utilities and Sanitary Services | 19,812 | 4,482 | 10.4 |
| Wholesale and Retail Trade | 268,091 | 38,527 | 12.5 |
| Wholesale Trade | 48,906 | 7,732 | 13.6 |
| Food, Bakery and Dairy Stores | 33,644 | 4,874 | 12.6 |
| Eating and Drinking Places | 30,226 | 8,352 | 21.4 |
| General Merchandise | 41,891 | 4,388 | 9.4 |
| Motor Vehicle Retail Service | 36,305 | 3,460 | 8.7 |
| Other Retail Trade | 77,079 | 9,721 | 11.2 |
| Banking and Finance | 70,006 | 5,222 | 6.9 |
| Banking | 26,134 | 1,581 | 5.7 |
| Insurance, Real Estate | 43,872 | 3,641 | 7.7 |
| Services | 332,241 | 100,473 | 23.1 |
| Business Services | 23,408 | 1,896 | 7.5 |
| Repair Services | 16,878 | 2,248 | 11.7 |
| Private Household | 10,786 | 26,863 | 71.2 |
| Other Personal Services | 37,446 | 16,130 | 29.9 |
| Entertainment and Recreation | 9,115 | 1,882 | 17.0 |
| Hospitals | 39,144 | 14,715 | 27.0 |
| Other Health Services | 25,097 | 3,860 | 13.3 |
| Elementary, Secondary and Colleges | 101,915 | 25,141 | 19.7 |
| Other Education Services | 7,211 | 655 | 8.2 |
| Welfare, Religious Services | 23,026 | 3,519 | 13.2 |
| Legal, Engineering and Other Professional Services | 38,215 | 3,564 | 8.5 |
| Public Administration | 174,519 | 19,378 | 9.9 |
| Total | 1,419,775 | 288,265 | 16.8 |

families (88,065) and poor white individuals (81,213) was greater than the number of poor black families (54,183) and poor black individuals (54,183), the incidence of poverty was much higher among black families (29.9% versus 9.0% for white families) and among black unrelated individuals (55.3% versus 32.5% of white unrelated individuals). Somewhat surprisingly, the mean income of poor black families was substantially greater than that of poor white families (\$2,322 and \$1,846, respectively), and the relative increase in income needed to raise each family to the poverty threshold was less among poor black families (73%) than among poor white families (78%).

Another area which is particularly relevant in analyzing white-black income differentials is the greater rate of female family headship among black families. Among black families, some 23.5% had a female for head, compared with only 8.8% of white families. The level of income for families headed by females was much lower than the level of income for male-headed families. Among white families, mean income was \$6,401 for female-headed families and \$11,796 for families with a male head.

Figure 23. Percentage Distribution of Virginia Families, by Income and Race: 1970

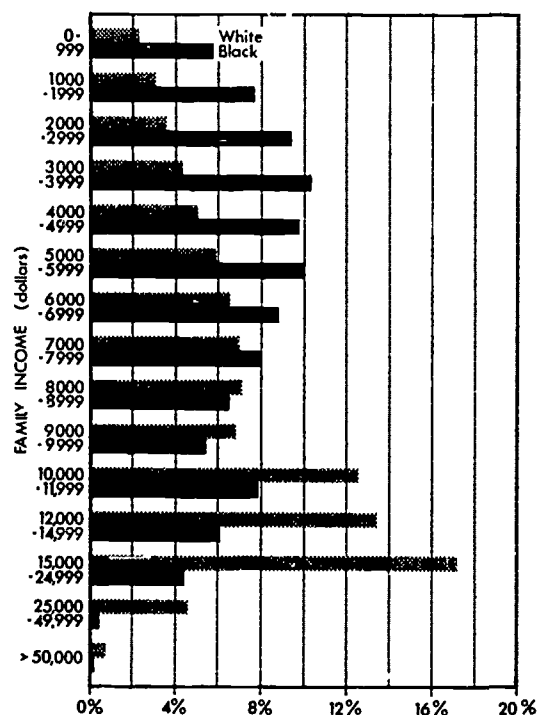


TABLE 39. DISTRIBUTION OF INCOME AND INCIDENCE OF POVERTY, BY RACE, VIRGINIA: 1970

| | White | Black |
|--|----------------|----------------|
| Number of Families With Income: | | |
| Less Than \$1,000 | 22,080 | 10,398 |
| \$1,000-\$1,999 | 29,739 | 13,695 |
| \$2,000-\$2,999 | 34,248 | 17,061 |
| \$3,000-\$3,999 | 42,387 | 18,551 |
| \$4,000-\$4,999 | 49,195 | 17,514 |
| \$5,000-\$5,999 | 57,962 | 18,036 |
| \$6,000-\$6,999 | 63,417 | 15,903 |
| \$7,000-\$7,999 | 68,812 | 14,293 |
| \$8,000-\$8,999 | 69,593 | 11,852 |
| \$9,000-\$9,999 | 66,338 | 9,831 |
| \$10,000-\$11,999 | 121,900 | 14,046 |
| \$12,000-\$14,999 | 130,516 | 10,996 |
| \$15,000-\$24,999 | 168,406 | 8,033 |
| \$25,000-\$49,999 | 45,182 | 784 |
| \$50,000+ | 6,882 | 220 |
| Total | 976,657 | 181,213 |
| Percent of Families Below Poverty | 9.0 | 29.9 |
| Mean Income of These Families | \$1,846 | \$2,322 |
| Mean Income Deficit | \$1,447 | \$1,705 |
| Deficit-Income Ratio | .78 | .73 |
| Percent of Unrelated Individuals | | |
| Below Poverty | 32.5 | 55.3 |
| Number of Families With Female Head | 85,975 | 42,499 |
| Mean Income | \$6,401 | \$4,134 |
| Percent Below Poverty | 28.0 | 54.3 |

TABLE 40. MOBILITY CHARACTERISTICS OF THE NONBLACK-NONWHITE
POPULATION, VIRGINIA: 1970

| | Number of Persons |
|------------------------------------|-------------------|
| Total | 25,612 |
| Native | 12,872 |
| Born in Virginia | 4,468 |
| Born in Different State | 5,956 |
| Northeast | 731 |
| North Central | 541 |
| South | 2,377 |
| West | 2,307 |
| Born Abroad and Not Reported | 2,448 |
| Persons Aged 5 Years and Over | 19,802 |
| Residence in 1965: | |
| Same House | 4,619 |
| Different House in U.S. | 7,404 |
| Same County | 1,902 |
| Different County | 5,502 |
| Same State | 1,052 |
| Different State | 4,450 |
| Northeast | 650 |
| North Central | 468 |
| South | 1,573 |
| West | 1,759 |
| Abroad | 5,139 |
| Moved, 1965 Residence Not Reported | 2,640 |

For black families, mean income level for families with a female head was \$4,134, compared with \$7,286 for families with a male head. Similarly, while the incidence of poverty was greater among female-headed families (36.8%) than male-headed families it also was higher among black families with a female head (54.3%) than among white families with a female head (28.0%).

B. The Nonblack-Nonwhite Population

1. Demographic Characteristics. The total number of persons of other races in Virginia in 1970 was 25,612 or 0.55% of the enumerated population. Of these persons, some 4,853 or 18.9% were American Indians, 3,500 or 13.7% were persons of Japanese ancestry, 2,805 or 11.0% were persons of Chinese ancestry, 7,496 or 29.3% were persons of Filipino ancestry, and 6,958 or 27.2% were of miscellaneous ancestry. Some 84.9% of these persons lived in urban areas, with 32.5% living in Northern Virginia, 32.0% living in the Tidewater area, 8.2% in the Peninsula, and 6.7% in the Richmond area.

Over half of these persons, 51.4% were males, although there was consider-

able variation among the ethnic groups. The percentage of the population that was male was 52.0% for Indians, 31.1% for Japanese, 52.5% for Chinese, and 62.2% for Filipinos.

This small segment of the population was the fastest growing between 1960 and 1970. In 1960, there were only 8,248 persons of these races in Virginia; the 1970 level of 25,612 thus represents an increase of 211%.

In terms of age composition, 31.0% of this population was between the ages of 0 and 17, 65.2% between the ages of 18 and 64, and 3.8% aged 65 and over. There were relatively fewer persons in the youngest and oldest age groups among the nonblack-nonwhite populations than among either the black or white populations.

2. Mobility. As expected, a substantial portion of the "other races" population is not native to the United States. As the data in Table 40 show, only about half (50.3%) was born in the United States (or to citizens of the United States). Only about a third of the native population (34.7%) was born in Virginia; considerable numbers were born in other Southern states (18.5%) and in Western states (17.9%).

TABLE 41. EDUCATIONAL ATTAINMENT OF THE NONBLACK-NONWHITE
POPULATION, VIRGINIA: 1970

| | Male | Female | Total | Percent |
|--------------------------|-------|--------|--------|---------|
| Persons Aged 25 and Over | 5,415 | 6,337 | 11,752 | 100.0 |
| Number With | | | | |
| 0 Years of School | 131 | 142 | 273 | 2.3 |
| 1-4 Years of School | 215 | 234 | 449 | 3.8 |
| 5-6 Years of School | 207 | 350 | 557 | 4.7 |
| 7 Years of School | 202 | 199 | 401 | 3.4 |
| 8 Years of School | 223 | 395 | 618 | 5.3 |
| 9-11 Years of School | 894 | 1,111 | 2,005 | 17.1 |
| 12 Years of School | 1,204 | 1,897 | 3,101 | 26.4 |
| 13-15 Years of School | 908 | 756 | 1,664 | 14.2 |
| 16 Years of School | 458 | 714 | 1,172 | 10.0 |
| 17+ Years of School | 973 | 539 | 1,512 | 12.9 |
| Median | 11.7 | 11.4 | 11.5 | |

This population is also highly mobile. Only 23.3% of all persons aged 5 and over lived in the same house in 1970 as they did in 1965. More than a fourth (27.8%) moved to Virginia from another state (mostly from the South and West) and another fourth (26.0%) from another country. Altogether, only 7,573 or 38.2% of these individuals lived in Virginia in 1965.

3. Education. Data on the educational achievement of the population of other races is presented in Table 41. Of the 11,752 persons aged 25 and over, about one-fifth (19.5%) had an elementary education or less. This was considerably lower than the comparable figure for whites (28.0%) and blacks (54.0%). Similarly, the share of persons with at least one year more than a secondary education, 37.1%, was substantially

greater than the comparable statistic for the white and black populations (25.2 and 8.6%, respectively). Almost one-fifth of all males in this population group (18.0%) completed at least one year of graduate or professional education.

4. Labor Force and Employment. The high level of educational attainment is consistent with the high rate of labor force participation among the nonblack-nonwhite population. As the data in Table 42 show, the labor force participation rates for males was very high (87.4%), probably due in considerable portion to the relatively large number of military personnel included in this population group and to differences in age composition. Somewhat over half of all male members of the labor force (51.9%) were in the armed

TABLE 42. EMPLOYMENT AND LABOR FORCE CHARACTERISTICS OF THE
NONBLACK-NONWHITE POPULATION, VIRGINIA: 1970

| | Male | Female | Total |
|--|-------|--------|--------|
| Total Aged 16 and Over | 7,950 | 7,996 | 15,946 |
| In Labor Force | 6,946 | 3,159 | 10,105 |
| Labor Force Participation Rate | 87.4% | 39.5% | 63.4% |
| Armed Forces | 3,605 | 54 | 3,659 |
| Civilian Labor Force | 3,341 | 3,105 | 6,446 |
| Employed | 3,281 | 2,929 | 6,210 |
| Unemployed | 60 | 176 | 236 |
| Unemployment Rate | 1.8% | 5.7% | 3.7% |
| Labor Force Participation Rate For Women With: | | | |
| Children Aged 0-5 | | 24.6% | |
| Children Aged 6-17, None Aged 0-5 | | 41.3% | |
| No Children Aged 0-17 | | 50.3% | |

forces. This factor was also a probable cause of the high degree of mobility found in this population as well as the concentration of the nonblack-nonwhite population in the Northern Virginia and Tidewater areas. Additionally, this factor may partially explain the relatively low rate of labor force participation among females--only 39.5% compared with a rate of 41.4% for whites and 46.9% for blacks. Although their number is absolutely small (54), members of the armed forces also accounted for a considerably greater portion of the labor force of female persons of non-black-nonwhite races (1.7%) than is true for white (0.6%) or black (0.3%) women.

Considering the incidence of unemployment among members of the civilian

labor force, the data show that for males, the rate among members of other races (1.8%) was marginally lower than the rate for whites (2.0%) and substantially lower than the rate for blacks (3.9%). The pattern was somewhat different for females with their rate of unemployment (5.7%) being considerably greater than that for white women (3.3%), but somewhat lower than that for black women (7.2%).

For women with children of pre-school age (0-5), the rate of labor force participation (24.6%) was considerably lower than the rate for white women (30.5%) and black women (49.7%) with children of the same age. For women with children of school age (6-17), but no children aged 0-5, the pattern was

TABLE 43. OCCUPATIONAL DISTRIBUTION AND INDUSTRIAL COMPOSITION OF THE EMPLOYED NONBLACK-NONWHITE LABOR FORCE, VIRGINIA: 1970

| | Number | Occupational Percent |
|---|--------|-------------------------|
| Total | 6,210 | 100.0 |
| Professional | 1,834 | 29.5 |
| Health | 577 | 9.3 |
| Managerial | 336 | 5.4 |
| Sales | 219 | 3.5 |
| Clerical | 1,028 | 16.6 |
| White Collar | 3,417 | 55.0 |
| Craftsmen | 447 | 7.2 |
| Nontransport Operatives | 686 | 11.1 |
| Transport Operatives | 194 | 3.1 |
| Nonfarm Laborers | 257 | 4.1 |
| Blue Collar | 1,584 | 25.5 |
| Farmers | 23 | 0.4 |
| Farm Laborers | 71 | 1.1 |
| Agriculture | 94 | 1.5 |
| Service | 970 | 15.6 |
| Food | 501 | 8.1 |
| Private Household | 145 | 2.3 |
| Total Service | 1,115 | 18.0 |
| | Number | Industrial Percent |
| Total | 6,210 | 100.0 |
| Agriculture, Forestry, Fisheries | 136 | 2.2 |
| Mining | 4 | 0.1 |
| Construction | 247 | 4.0 |
| Durable Goods Manufacturing | 521 | 8.4 |
| Nondurable Goods Manufacturing | 503 | 8.1 |
| Transportation, Communication, and Utilities | 308 | 5.0 |
| Wholesale and Retail Trade | 1,179 | 19.0 |
| Eating and Drinking Places | 494 | 8.0 |
| Banking and Finance | 192 | 3.1 |
| Services | 2,256 | 36.3 |
| Hospitals | 579 | 9.3 |
| Other Health | 121 | 1.9 |
| Public Administration | 864 | 13.9 |

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similar, with nonblack-nonwhite women participating to a lesser extent (41.3%) than either white (48.2%) or black (61.4%) women. However, for women with no children aged 17 or less the pattern was reversed; women of other races participated in the labor force to a greater extent (50.3%) than did white (42.6%) or black (41.3%) women. Possibly, this difference was due to differences in the age composition of women with no children of school age.

5. Occupational and Industrial Composition. The distribution of the 6,210 employed persons of other races by occupation and by industry are presented in Table 43. The data show that these persons were engaged in white collar occupations at about the same rate as whites (55.0% of the other races labor force and 54.9% of the white labor force). The percentage of professional workers of other races (29.5%) was much greater than observed for whites (17.8%). This was probably due to the relatively high proportion of these workers engaged in health-related fields (physicians, nurses, and other health professionals)--9.3% of the employed civilian labor force. By way of contrast only 2.2% of the white civilian labor force and 1.0% of the black civilian labor force were engaged in these occupations.

The proportion of persons of other races engaged in blue collar and agricultural occupations (25.5% and 1.5%, respectively) was lower than the rates for either whites (34.1% and 2.5%, respectively) or blacks (46.9% and 3.8%). Nonblack-nonwhite workers were engaged in service occupations at a rate more than twice that of whites (18.0% versus 8.5%), but much less than that of blacks (29.8%). A considerable portion of non-household service workers (501 of 970 or 51.6%) were engaged in food services, probably primarily in ethnic restaurants.

Considering industrial composition, members of other races were concentrated in trade (19.0%), services (36.3%), and public administration (13.9%) to an extent greater than either whites (18.9%, 23.4%, and 12.3%, respectively) or blacks (13.4%, 34.9%, and 6.7%, respectively). Additionally, these persons were located in banking and finance (3.1%) to a greater extent than were blacks (1.8%) but to a lesser extent than were whites (4.9%). As might be expected from the occupational composition, the relative share of the nonblack-nonwhite labor force employed in eating and drinking places (8.0%) and engaged in health services (11.2%) was much greater than the corresponding share for whites (2.1% and 1.6%) or for blacks (2.9% and 6.4%, respectively). While persons of

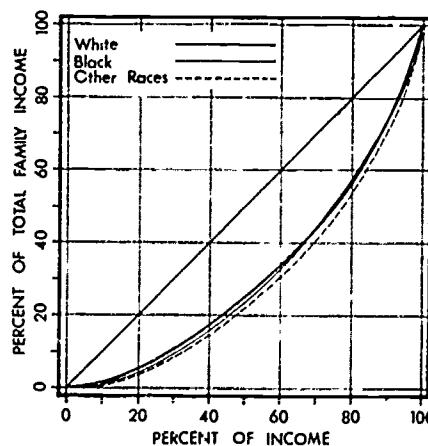
other races comprised only 0.36% of the employed civilian labor force, they totaled 1.26% of all those employed in eating and drinking places and 0.84% of those employed in the provision of health services.

6. Income. The data in Table 44 show that the mean income level of the 4,386 nonblack-nonwhite families (\$9,000) was about midway between the level of white (\$11,321) and black (\$6,547) families. In terms of income distribution, families of other races showed more of a bimodal distribution than did black or white families. Almost a third of these families (29.3%) had less than a \$5,000 income compared with only 18.2% of white families and 42.6% of black families. On the other end of the scale, 17.4% of other races families had an income of \$15,000 or more, compared with 22.6% of white families and 5.0% of black families. The relative inequality of the distribution of income among families of other races is also shown by the Lorenz curves in Figure 24. These curves show more inequality in the distribution of income among these families than among either white or black families.

The data in Table 44 also show a female family headship rate for nonblack-nonwhite families of 15.5%. This was higher than the rate among white families (8.8%), but lower than that found among black families (23.5%). The average income of female-headed families of other races (\$3,922) was somewhat lower than that of white (\$6,401) or black (\$4,134) families.

The incidence of poverty among families of other races follows a similar

Figure 24. Lorenz Curves for Distribution of Family Income, by Race, Virginia: 1970



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TABLE 44. DISTRIBUTION OF INCOME OF NONBLACK-NONWHITE FAMILIES,
VIRGINIA: 1970

| | Number | Percent |
|----------------------------------|---------|---------|
| Total Families | 4,386 | 100.00 |
| With Income: | | |
| Less Than \$1,000 | 340 | 7.75 |
| \$1,000-\$1,999 | 97 | 2.21 |
| \$2,000-\$2,999 | 186 | 4.24 |
| \$3,000-\$3,999 | 314 | 7.16 |
| \$4,000-\$4,999 | 350 | 7.98 |
| \$5,000-\$5,999 | 387 | 8.82 |
| \$6,000-\$6,999 | 362 | 8.25 |
| \$7,000-\$7,999 | 342 | 7.80 |
| \$8,000-\$8,999 | 260 | 5.93 |
| \$9,000-\$9,999 | 291 | 6.63 |
| \$10,000-\$11,999 | 356 | 8.12 |
| \$12,000-\$14,999 | 338 | 7.71 |
| \$15,000-\$24,999 | 596 | 13.59 |
| \$25,000-\$49,999 | 153 | 3.49 |
| \$50,000+ | 14 | 0.32 |
| Mean Family Income | \$9,000 | |
| Families With Female Head | 678 | |
| Mean Income | \$3,922 | |
| Families Below Poverty Level | 757 | |
| Percent | 17.3% | |
| Mean Income | \$1,590 | |
| Mean Income Deficit | \$2,060 | |
| Deficit Income Ratio | 1.30 | |
| Percent of Unrelated Individuals | | |
| Below Poverty Level | 30.8% | |

pattern. Some 17.3% of these families reported a level of income that was below the poverty level, compared with 9.0% of white families and 29.9% of black families. However, the mean income of poor families of other races (\$1,590) was lower than that of poor white (\$1,846) and poor black (\$2,322) families, and the relative increase in income needed to raise these families to the poverty threshold (130%) was also greater than that for white and black families (78% and 73%, respectively). Surprisingly, the incidence of poverty for unrelated individuals of other races (30.8%) was lower than the incidence for white (32.5%) and black (55.3%) unrelated individuals. It is possible that the high proportion of nonblack-nonwhite persons serving in the armed forces was a significant factor in explaining this difference.

C. Persons of Spanish Language

The 48,742 persons of Spanish language accounted for slightly more than 1% of the state's population and were rather heavily concentrated in urban

areas (87.6%). More than half (24,727) of the state's persons of Spanish language lived in Northern Virginia; sizeable numbers were also found in the Tidewater (8,392), Peninsula (4,218), and Richmond (3,262) areas.

1. Demographic Characteristics and Mobility. The data on the demography of Virginians of Spanish language, show that this group was predominately male (52.3%) and rather young. About two-fifths of these persons (40.3%) were under the age of 18, compared with 34.4% of all Virginians. Median age for Spanish language Virginians was 21.9 years, nearly five full years younger than the median for the entire state (26.8 years). About three-fourths of these persons (77.0%) were born in the United States. Of these, only 29.1% were born in Virginia. This population was highly mobile between 1965 and 1970, with almost 80% changing residence in this five-year period. Of those whose 1965 residence was in the United States (31,975), over half (17,056) changed their county of residence and a sizeable minority changed their state of residence (13,159). All told, of the 43,214 persons of Spanish language aged five or

TABLE 45. EDUCATIONAL ATTAINMENT OF THE SPANISH LANGUAGE
POPULATION, VIRGINIA: 1970

| | Spanish Language Persons | Other Persons |
|------------------------|-----------------------------|---------------|
| Total Aged 25 and Over | 20,734 | 2,425,348 |
| With: | | |
| 0 Years of School | 192 | 39,516 |
| 1-4 Years of School | 371 | 147,336 |
| 5-6 Years of School | 701 | 202,365 |
| 7 Years of School | 481 | 212,457 |
| 8 Years of School | 1,125 | 183,853 |
| 9-11 Years of School | 2,191 | 486,771 |
| 12 Years of School | 7,098 | 609,844 |
| 13-15 Years of School | 3,547 | 247,291 |
| 16 Years of School | 2,349 | 174,345 |
| 17+ Years of School | 2,679 | 121,570 |
| Median | 12.8 | 11.6 |

more years in 1970, only 18,816, or 43.5%, lived in Virginia in 1965.

2. Education. The Spanish language population of the state tended, on the whole, to be somewhat better educated than the balance of the population. As Table 45 indicates, median years of school completed for this population was some 12.8 years, compared with 11.6 years for the remainder of the population. Only 13.8% of the Spanish language population had completed eight or fewer years of school, compared with 32.4% of the remainder of the population. On the other end of the spectrum, 41.4% of the Spanish language population had completed at least one year of post secondary education, compared with 22.4% of the balance of the population. (These differences are reflected in the occupational composition.)

3. Labor Force and Employment. In 1970 65.9% of all Spanish language persons aged 16 and over participated in the labor force (see Table 46). The rate was 86.1% for males and 44.2% for females. Both rates were considerably higher than the rates for the balance of the population (78.8% for males and 42.4% for females). The military comprised a sizeable portion of the Spanish language labor force (35.0% among males and 2.6% among females). Again, both were considerably higher than the proportions found in the remainder of the population (13.6% of males and 0.5% for females).

Among Spanish language members of the civilian labor force, the rate of unemployment (3.5%) was somewhat greater than was found in the rest of the labor force (3.0%). This discrepancy was also

TABLE 46. EMPLOYMENT AND LABOR FORCE CHARACTERISTICS OF THE
SPANISH LANGUAGE POPULATION, VIRGINIA: 1970

| | Male | Female |
|-----------------------------------|--------|--------|
| Total 16 Years Old and Over | 15,989 | 14,938 |
| Labor Force | 13,770 | 6,606 |
| Armed Forces | 4,822 | 170 |
| Civilian Labor Force | 8,948 | 6,436 |
| Employed | 8,718 | 6,123 |
| Unemployed | 230 | 313 |
| Rate | 2.6% | 4.9% |
| Labor Force Participation | | |
| Rate of Women With: | | |
| Children Aged 0-5 | | 32.7% |
| Children Aged 6-17, none Aged 0-5 | | 46.2% |
| No Children Aged 0-17 | | 49.9% |

true for each sex: 2.6% of Spanish language males were unemployed compared with 2.3% of other males, and 4.9% of Spanish language females were unemployed compared with 4.0% of other females.

The presence of young children had a greater effect upon the female labor force participation rate among persons of Spanish language than among the balance of the population. For women with children of preschool age, the labor force participation rate was 32.7% for Spanish language persons and 33.8% for all others. Similarly, for women with children of elementary and secondary school age, the rate was notably lower among Spanish speakers (46.2%) than it was for all other women (50.3%). However, for women with no children under age 18, the labor force participation rate was higher among Spanish language (49.9% versus 42.4% for non-Spanish language) women. In the aggregate, labor force participation was higher for Spanish language women, relative to

the remainder of the population, between the ages of 16 and 24, but lower at all older ages.

4. Occupational and Industrial Composition. As the data in Table 46 indicate, there was a total of 14,841 persons of Spanish language employed as civilians in Virginia in 1970. The occupational and industrial composition of these workers is given in Table 47.

Over two-thirds of the Spanish language labor force was engaged in white collar occupations; much smaller shares were found in blue collar (18.0%) and service (13.6%) occupations, and very few (0.7%) were engaged in agriculture. These proportions were considerably different for the balance of the population--about half was white collar (49.4%), slightly more than one-third blue collar (36.0%), one eighth (12.0%) service, and the remaining 2.6% in agriculture. More than one-fourth of the Spanish language labor force was

TABLE 47. OCCUPATIONAL DISTRIBUTION AND INDUSTRIAL COMPOSITION OF THE EMPLOYED LABOR FORCE OF SPANISH LANGUAGE, VIRGINIA: 1970

| Occupation | Persons | Percent |
|---|---------|---------|
| Total | 14,481 | 100.0 |
| Professional | 4,079 | 27.5 |
| Managerial | 1,295 | 8.7 |
| Sales | 1,063 | 7.2 |
| Clerical | 3,603 | 24.3 |
| White Collar | 10,040 | 67.7 |
| Craftsmen | 1,228 | 8.3 |
| Operatives | 862 | 5.8 |
| Transport Operatives | 277 | 1.9 |
| Nonfarm Laborers | 307 | 2.1 |
| Blue Collar | 2,674 | 18.0 |
| Farmers | 70 | 0.5 |
| Farm Laborers | 37 | 0.3 |
| Agricultural | 107 | 0.7 |
| Service | 1,660 | 11.2 |
| Private Households | 360 | 2.4 |
| Service | 2,020 | 13.6 |
| <hr/> | | |
| Industry | Persons | Percent |
| Total | 14,841 | 100.0 |
| Agriculture, Forestry, Fisheries | 204 | 1.4 |
| Mining | 14 | 0.1 |
| Construction | 568 | 3.8 |
| Durable Goods Manufacturing | 809 | 5.5 |
| Nondurable Goods Manufacturing | 782 | 5.3 |
| Transportation, Communications, and Utilities | 650 | 4.4 |
| Trade | 2,831 | 19.1 |
| Banking and Finance | 1,101 | 7.4 |
| Services | 5,281 | 35.6 |
| Public Administration | 2,601 | 17.5 |

employed in a professional capacity, compared with 15.9% of non-Spanish language workers. While persons of Spanish language constituted 0.87% of the employed civilian labor force of the state, they constituted 3.0% of physicians, dentists, and other health practitioners, 1.3% of other health professionals, and 1.3% of all engineers.

The Spanish language labor force, was very heavily concentrated in services (35.6%), trade (19.1%), and public administration (17.5%). All together, these three sectors included nearly three-fourths of the labor force among Spanish language persons. For the balance of the population, services employed 25.3% of the labor force, trade 18.0%, and public administration 11.3%.

5. Income. Based on the relatively high level of education and the high number of professional workers among persons of Spanish language, a relatively high level of income was anticipated. The average income for families with a Spanish language head was \$11,995 or 13.5% higher than the statewide average of \$10,568. However, the level of income per family member was slightly lower in Spanish language families

(\$2,959) than in all families (\$2,963). because of a larger average family size (4.1 members as opposed to 3.6 for the entire State).

The data in Table 48 show that only 15.0% of all Spanish language families had an income under \$5,000. An additional 31.7% received an income between \$5,000 and \$9,999, 25.2% between \$10,000 and \$14,999, and the remaining 28.1% in excess of \$15,000. This distribution compares quite favorably with that of the non-Spanish language population. Among the latter segment of the population, 22.1% received less than \$5,000, 34.2% were between \$5,000 and \$9,999, 23.9% were between \$10,000 and \$14,999 and 19.7% earned in excess of \$15,000.

The incidence of poverty was also less among Spanish-speaking families and unrelated individuals. Only 8.3% of families and 31.1% of unrelated individuals of Spanish language earned an income below the poverty criterion. For non-Spanish language families and individuals, these percentages were 12.3% and 36.9%, respectively. However, the mean income of poor Spanish language families (\$1,960) was less than the mean income of all poor non-Spanish families (\$2,050); the relative increase

TABLE 48. INCOME CHARACTERISTICS OF SPANISH LANGUAGE FAMILIES, VIRGINIA: 1970

| | Number | Percent |
|--------------------------------------|----------|---------|
| All Families | 10,655 | 100.0 |
| With Income: | | |
| Less Than \$1,000 | 286 | 2.7 |
| \$1,000-\$1,999 | 171 | 1.6 |
| \$2,000-\$2,999 | 310 | 2.9 |
| \$3,000-\$3,999 | 400 | 3.8 |
| \$4,000-\$4,999 | 433 | 4.1 |
| \$5,000-\$5,999 | 654 | 6.1 |
| \$6,000-\$6,999 | 722 | 6.8 |
| \$7,000-\$7,999 | 717 | 6.7 |
| \$8,000-\$8,999 | 723 | 6.8 |
| \$9,000-\$9,999 | 565 | 5.3 |
| \$10,000-\$11,999 | 1,242 | 11.7 |
| \$12,000-\$14,999 | 1,442 | 13.5 |
| \$15,000-\$24,999 | 2,319 | 21.8 |
| \$25,000-\$49,999 | 595 | 5.6 |
| \$50,000 | 76 | 0.7 |
| Mean Income | \$11,995 | |
| Percent of Families With Income | | |
| Below Poverty | 8.3% | |
| Mean Income | \$1,960 | |
| Mean Income Deficit | \$1,785 | |
| Deficit Income Ratio | .91 | |
| Percent of Individuals Below Poverty | 31.1% | |
| Families With Female Head | 733 | |
| Mean Income | \$5,304 | |
| Percent Below Poverty | 35.5% | |

in income needed to move all these families to the poverty threshold was also somewhat greater in poor Spanish language families (91%) than in poor non-Spanish language families (75%).

As a final note, the female family headship rate among Spanish language families (6.9%) was considerably less than the rate for the balance of the population (11.2%). While the rate of poverty for female-headed families was lower among Spanish language families (35.5%) than among non-Spanish language families (37.0%), average family income for Spanish female-headed families (\$5,304) was only 94% of the level for all other female-headed families (\$5,644).

This concludes the summary of comparative socioeconomic characteristics of residential, racial, and ethnic groups in Virginia. The intention of this summary is to demonstrate the degree of variation between urban and rural Virginians, metropolitan and nonmetropolitan Virginians, and black and white Virginians. Several conclusions about the nature of this variation have been established. Where possible, plausible explanations have been offered. The following chapter summarizes some of the existing empirical relationships found by rigorous statistical analysis. For technically minded readers, the complete analysis is presented in the Appendix.

Chapter IX.

Summary of Analysis

The analytical material in the appendix is an effort to determine patterns of behavior of certain variables as they are associated with other variables.* The intention is to determine which factors seem to be most responsible for the variation in the socioeconomic indicators that have been discussed throughout this report.

As the appendix shows, one hypothesis formulated was that the level of per capita income was systematically related to a series of demographic (age composition, racial composition, mobility), social (level of education, fertility), and economic (labor force participation rates, unemployment, industrial composition) variables. However, this procedure (multiple regression analysis) does not permit adjustment for the fact that many of the explanatory variables are systematically related to each other (this is called multicollinearity).

To solve this problem, a technique called factor analysis was used. Essentially, factor analysis links a series of variables together to form one identity which is termed a factor. Each factor is unrelated to all other factors which evolve; hence, each serves as an essentially mutually independent "supervariable" which helps to establish an explanation for the differences in behavior of (in this case) groups of areas. It is important to realize that: "Factor analysis does not directly identify the factors. A factor is initially a blank entity. . . . Identification of a factor is usually accomplished by considering only those variables that . . . have the highest numerical value in each factor. The analyst must then apply his knowledge of his discipline and his analytical skills in an effort to arrive at a meaning of each factor. . . ."

The factor analysis in the appendix considers two subgroups of Virginia jurisdictions: (a) all cities and (b) all counties. For the county set, four significant factors were found: (1) socioeconomic status; (2) a young, relatively high fertility population; (3) labor force participation; and (4) a nonwhite factor. The city set, on the other hand, showed

six significant factors: (1) socioeconomic status; (2) an aged population; (3) fertility; (4) female labor force participation; (5) agricultural employment; and (6) male labor force participation. These two sets of factors serve to differentiate the basic characteristics of cities and counties.

The final step was to combine factor analysis with multiple regression analysis. This was accomplished by removing, one by one, the dependent variables (those variables being analyzed) and creating new factors of the remaining variables for cities and for counties. The five dependent variables chosen for analysis were per capita income, median education of the population aged 25 years or more, rate of interstate migration, male labor force participation rates, and female labor force participation rates.

Per Capita Income. In the county subset, most of the behavior of income was explained by a factor representing socioeconomic status. The association was positive, indicating that variables such as educational level and occupational status have some effect on income. Additionally, there was a smaller positive association between this variable and a factor representing labor force participation. There was a negative association of similar magnitude between income and a factor representing a nonwhite, high fertility population. For the city subset, there was again a high, positive association between income and a socioeconomic status factor. A smaller positive association was found with a factor representing female income and a factor linking male labor force participation and the rate of unemployment.

*"Behavior" of a variable means deviation from the mean value.

**Bernard M. Olsen and Gerald Garb, "A Factor Analysis of Characteristics of the South," in Essays in Southern Economic Development, edited by Melvin L. Greenhut and W. Tate Whitman, Chapel Hill: University of North Carolina Press, 1964, p. 295.

Median Years of School Completed.

The analysis of this variable produced similar results to that of income. For counties, a high positive association was found between this variable and socioeconomic status; there was a smaller positive association linking the variable to labor force participation rates. For cities, almost all of the explanatory power (96%) was found in the socioeconomic status factor.

Rate of Interstate Migration. Among counties, socioeconomic status was again the predominate factor, although it was somewhat weaker for rate of interstate migration than for income and education. There was also a fairly strong inverse relationship between the rate of interstate migration and a factor which represents a stagnant economy. This factor was composed of high proportions of older persons, agricultural employment, and poor housing, coupled with low fertility and little or no population growth. For cities, socioeconomic status was much more important in an explanatory sense than was the county counterpart. Another positive association existed between migration rates and a variable suggesting less urbanized portions of cities. This may not be too surprising when it is remembered that the two "extended" cities in Virginia (Virginia Beach and Chesapeake) had relatively large amounts of immigration in the inter-

censal period. Two other factors, female labor force participation rates and high fertility, showed a negative association with interstate migration.

Male and Female Labor Force Participation. The factors that evolved as explaining the behavior of these variables were rather disappointing in terms of their explanatory powers. For male rates in counties, positive associations were found with factors representing (a) a young, nonagricultural population, and (b) female labor force participation. In cities, the significant factors were: (a) high growth rate of population, (b) high fertility and high proportion of nonwhites; and (c) high proportion of nonagricultural workers.

For female rates of labor force participation, the county subset shows two factors with some significant explanatory power (both positive). These are the socioeconomic status factor and a factor combining high growth rates and high rates of male labor force participation. In the city subset, female labor force participation was found to increase with socioeconomic status, decrease with higher fertility and higher proportion nonwhite, and increase with percent of the population classified as urban.

Appendix.

Multivariate Analysis of Socioeconomic Characteristics of Virginia Cities and Counties

In the previous chapters variables of general economic, sociological, and demographic significance have been considered; analysis was limited to a straightforward presentation of data for each state planning district and to a summary by racial or residential characteristics.

This analysis is concerned with explaining variation in a number of variables (per capita income of persons, percent of the population who were interstate migrants between 1965-1970, median education of the population 25 years old and over, percent of males aged 16 years and over in the labor force, and percent of females aged 16 years and over in the labor force) in terms of other variables. This type of analysis is directed toward finding empirical associations between a dependent variable whose "behavior" it would be desirable to explain and other, independent, variables.

A total of twenty dependent and independent variables were chosen for analysis. A list of these variables is presented in Table 49. Before presenting the results of this analysis, the methodology employed is examined in some detail.

A. Methodology

Step-wise multiple regression has been used throughout this analysis. It facilitates predicting the behavior of one dependent variable based on the behavior of any number of independent variables. This is accomplished by estimating a multiple regression equation from an equation fitted to the data by a least-squares criterion.

The least-squares estimating equation is generated in the following form:

$$Y_p = a + b_1X_1 + b_2X_2 + \dots + b_kX_k, \quad (1)$$

where:

- Y_p = the dependent variable,
- a = a constant, indicating the point at which the regression line crosses the Y axis.
- b = a constant, often called a regression coefficient, indicating the amount of change produced in Y_p by a change in X , with all other X 's held constant,
- X = an independent variable.

Often independent variables are expressed in different physical units, i.e., percent growth, median education, per capita income, etc. In order to facilitate comparisons between different independent variables, their units may be standardized by computing beta weights (B). These are related to the regression coefficients (b 's) as follows:

$$B_{x_1} = \left[b_{x_1} \right] \left[\frac{SD_{x_1}}{SD_{Y_p}} \right], \quad (2)$$

i.e., the beta coefficient for independent variable X_1 is equal to the regression coefficient of X_1 multiplied by the ratio of the standard deviation of X_1 to the standard deviation of the dependent variable, Y_p .

The beta coefficients also indicate the direction of the relationship between each independent variable and the dependent variable. Thus a negative beta weight indicates an inverse relationship (the higher the value of the independent variable, the lower the value of the dependent variable, and vice-versa), while a positive beta weight indicates a direct relationship between the two variables (the higher the value on one, the higher the value on the other, and conversely).

Using data for each county and independent city in Virginia (which increases the number of observations

to 138, rather than 22, as it would have been had state planning districts been used for the basic geographical unit) the following least-squares equation was generated using per capita income as the dependent variable:

$$\begin{aligned} \text{INCOME} = & 5525.5 + 2.296 \text{ WHTCLR} + \\ & 1.228 \text{ BLCLR} + .680 \text{ AGRCLTRE} \\ & -.243 \text{ MEDED} -.161 \text{ URBAN} \dots \end{aligned}$$

(3)

In this equation we have substituted the appropriate variable names for each X, and each constant is a beta weight. The actual equation was, of course, much longer, since it consisted of 19 independent variables. Freely translated, this equation states that a direct relationship holds between INCOME and WHTCLR, BLCLR, and AGRCLTRE, while an inverse relationship exists between INCOME, MEDED and URBAN. This raises several difficulties, for one would normally expect a direct, rather than an inverse, relationship between INCOME and MEDED, as well as URBAN. A logical explanation for this result is that the independent variables WHTCLR, BLCLR, AGRCLTRE, MEDED, and URBAN are all highly interrelated. When WHTCLR is introduced into the regression equation it "explains" a considerable proportion of the variation in INCOME. BLCLR is then added to the equation, and it explains a certain proportion of the variation left in INCOME which was not previously explained by WHTCLR. By the time MEDED enters the equation, all of

the variation it would normally explain has already been accounted for by the preceding variables.

The difficulty thus stems from the fact that many of the independent variables are not truly "independent", but rather show a high degree of multicollinearity (that is, they are directly or inversely related to each other).

There are several possible solutions to this problem. One is simply to ignore the multicollinearity. The second is to drop all independent variables that are associated with one another, save for one, but this often results in throwing out conceptually important variables. The third alternative is to weight each variable in an effort to diminish, or minimize, the multicollinearity; this factor analysis technique, which is used in this study, provides a method for calculating weights to be used in loading variables, as well as reducing the number of independent variables to be analyzed.

One of the most common uses of factor analysis is for data reduction. This is accomplished by mathematical manipulation of the zero-order correlation coefficient matrix formed between all independent variables. The result of this manipulation is the output of a factor matrix (see Tables 50A and 50B). In the factor matrix, discrete factors are produced--four factors in Table 50A, six factors in

TABLE 49. VARIABLES EMPLOYED IN STATISTICAL ANALYSES

| Variable | Description |
|----------|--|
| INCOME | Per Capita Income of Persons Aged 14+ |
| AGEDPOP | Percent of Population Aged 65+ |
| NONWHITE | Percent of Population Nonwhite |
| NATIVE | Percent of Population Born in Virginia |
| MIGRANTS | Percent of Population Who Were Interstate Migrants Between 1965 & 1970 |
| NOHGHSCH | Percent of Population Aged 25+ With 0-11 Years of School |
| COLGRADS | Percent of Population Aged 25+ With 16+ Years of School |
| WHTCLR | Percent of Labor Force in White Collar Occupations |
| BLCLR | Percent of Labor Force in Blue Collar Occupations |
| AGRCLTRE | Percent of Labor Force in Agricultural Occupations |
| URBAN | Percent of Population Living in an Urban Area |
| NOJOB | Percent of Male Civilian Labor Force Unemployed |
| NOPLUMB | Percent of all Housing Units Lacking Some Plumbing |
| NOTV | Percent of all Occupied Housing Units Without a Television |
| GROWTH | Percent Population Growth, 1960-1970 |
| CUMFRTY | Cumulative Fertility Rate of Married Women Aged 35-44 |
| AGSPFRTY | Age Specific Fertility Rate of Females Aged 25-34 |
| MEDED | Median Education of Persons Aged 25+ |
| MLFPR | Percent of Males Aged 16+ in Labor Force |
| FLFPR | Percent of Females Aged 16+ in Labor Force |

TABLE 50A. FACTOR ANALYSIS, VIRGINIA COUNTIES

| | Factor 1 | Factor 2 | Factor 3 | Factor 4 |
|----------|----------|----------|----------|----------|
| INCOME | .74670 | .18200 | .27008 | -.27115 |
| AGEDPOP | -.19578 | -.80171 | -.24861 | .02866 |
| NONWHITE | -.12945 | -.10617 | .17396 | .84594 |
| NATIVE | -.76678 | -.39077 | -.16960 | .13108 |
| MIGRANTS | .64343 | .55239 | .25104 | -.14960 |
| NOHGHSC | -.76754 | -.21622 | -.32934 | .29285 |
| COLGRADS | .88846 | .22117 | .16411 | -.04148 |
| WHTCLR | .88494 | .32389 | .16048 | -.20322 |
| BLCLR | -.95319 | -.00847 | -.15688 | .01653 |
| AGRCLTRE | -.20309 | -.56278 | -.10963 | .32922 |
| URBAN | .62499 | .33582 | .20858 | -.25892 |
| NOJOB | -.07312 | -.22017 | -.40017 | -.07590 |
| NOTV | -.33006 | -.24777 | -.21014 | .35056 |
| NOPLUMB | -.60937 | -.42046 | -.42593 | .39797 |
| GROWTH | .45527 | .58937 | .42348 | -.15013 |
| CUMFRTY | -.29487 | .09635 | -.22607 | .70465 |
| AGSPFRTY | .22646 | .53524 | .04732 | .33347 |
| MEDED | .74150 | .29980 | .40060 | -.20462 |
| MLFPR | .25125 | .26411 | .63260 | -.12554 |
| FLFPR | .28740 | -.00575 | .68535 | -.04723 |

Table 50B and each variable is given a factor loading on each factor. The factors have the following characteristics:

- (1) each factor is maximally independent from all other factors, and,
- (2) each factor represents an underlying pattern in the data.

For the purposes of this analysis a minimum value of $\pm .4$ was chosen for factor loadings. Any loading with an absolute value less than $\pm .4$ was not considered to be statistically significant.

Table 50A indicates that eleven variables load significantly on Factor 1, six variables on Factor 2, six variables on Factor 3, and two variables on Factor 4.

Similarly, Table 50B indicates twelve variables with high loadings on Factor 1, five variables loading on Factor 2, three variables loading on Factor 3, two variables loading on Factor 4, one variable loading on Factor 5, and three variables loading on Factor 6.

Conceptualization of each factor, while based only on those variables with significant loadings on that factor, is complicated because in some instances a variable will load significantly on several factors. In

these special cases several rules of thumb have been applied:*

- (1) if a variable loads significantly and in the same direction (loadings are all positive or all negative) on two or more factors, then it is excluded. In Table 50A the variables MIGRANTS, NONPLUMB, GROWTH and MEDED are thus omitted from the conceptualization of the factors;
- (2) if a variable loads significantly but in different directions on two factors, then the loading with the greater absolute value is retained, and the lesser loading excluded. In Table 50B the variable AGEDPOP is included in Factor 2 and excluded from Factor 1;
- (3) if a variable loads significantly on three factors, with either two positive/one negative or two negative/one positive loadings, then the "odd" loading is retained, the other two dropped. In Table 50B the vari-

*R. J. Rummel, *Applied Factor Analysis*, Evanston: Northeastern University Press, 1970, p. 441

TABLE 50B. FACTOR ANALYSIS, VIRGINIA CITIES

| | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Factor 5 | Factor 6 |
|----------|----------|----------|----------|----------|----------|----------|
| INCOME | .74827 | -.11921 | .04340 | .39965 | -.22743 | .21807 |
| AGEDPOP | -.43430 | .44894 | -.27283 | .05776 | -.03374 | -.37924 |
| NONWHITE | -.41247 | -.05450 | .55725 | .41614 | .16815 | -.31384 |
| NATIVE | -.79229 | .34095 | -.25842 | -.02453 | -.03493 | -.07844 |
| MIGRANTS | .80606 | -.06522 | -.09417 | -.11454 | .36560 | .20082 |
| NOHGHSCH | -.84564 | .34244 | .11712 | .14802 | -.12914 | .14093 |
| COLGRADS | .87764 | .27626 | -.06532 | .20585 | .25792 | -.02765 |
| WHTCLR | .94595 | -.07377 | .03154 | .08773 | -.07541 | .10801 |
| BLCLR | -.94177 | .07582 | -.04495 | -.09415 | .04329 | -.11426 |
| AGRCLTRE | .09988 | -.01413 | .01204 | -.04334 | .81761 | .01176 |
| URBAN | .04944 | .44472 | -.12825 | .22902 | -.39772 | -.14650 |
| NOJOB | -.02449 | .02717 | -.03603 | .01088 | -.05001 | -.53249 |
| NOTV | -.23079 | .56016 | .03521 | -.15652 | .01295 | .04339 |
| NOPLUMB | -.52235 | .36432 | .08936 | .15231 | .22350 | .00616 |
| GROWTH | .41618 | -.62885 | -.13408 | -.06519 | .14047 | .43422 |
| CUMFRTY | -.20416 | -.21404 | .72831 | -.18656 | .05351 | .19997 |
| AGSPFRTY | .18994 | .14202 | .53324 | -.10954 | -.04517 | .02920 |
| MEDED | .83158 | -.27050 | -.17524 | .01292 | .02869 | -.10964 |
| MLFPR | -.03564 | -.51419 | .30226 | .11632 | -.39579 | .53947 |
| FLFPR | .15613 | -.04037 | -.25151 | .92737 | -.12595 | .00262 |

able NONWHITE loads significantly on three factors, but only the loading on Factor 1 is retained.

In Table 50A we have reproduced the initial factor analysis (including all twenty variables) for the county subsample. After applying the preceding rules of thumb, Factor 1 is seen to include the following variables:

| <u>Positive Loadings</u> | <u>Negative Loadings</u> |
|--------------------------|--------------------------|
| COLGRADS | BLCLR |
| INCOME | NATIVE |
| URBAN | NOHGHSCH |
| WHTCLR | |

Factor 1 may be viewed as representing a general socioeconomic status (SES) dimension in the data, since it includes those variables most commonly used to measure SES--income, occupation, and education.

Factor 2 includes the following variables:

| <u>Positive Loadings</u> | <u>Negative Loadings</u> |
|--------------------------|--------------------------|
| AGSPFRTY | AGEDPOP |
| | AGRCLTRE |

Factor 2 delimits a young population with relatively high fertility and is limited to white and blue collar occupations.

FACTOR 3 includes:

| <u>Positive Loadings</u> | <u>Negative Loadings</u> |
|--------------------------|--------------------------|
| FLFPR | NOJOB |
| MLFPR | |

Factor 3 represents a dimension of labor force activity for both males and females.

Factor 4 includes:

| <u>Positive Loadings</u> | <u>Negative Loadings</u> |
|--------------------------|--------------------------|
| CUMFRTY | |
| NONWHITE | |

This factor represents a nonwhite aspect in the data, with an associated measure of high cumulative fertility for females aged 35-44.

The city subsample, shown in Table 50B, has six factors, two more than in the county subsample.

Factor 1 in the city subsample consists of the following variables:

| <u>Positive Loadings</u> | <u>Negative Loadings</u> |
|--------------------------|--------------------------|
| COLGRADS | BLCLR |
| INCOME | NATIVE |
| MEDED | NOHGHSCH |
| MIGRANTS | NONWHITE |
| WHTCLR | NONPLUMB |

Factor 1 is seen to be quite similar to its analogue in the county subsample; in each case a general measure of SES is tapped. City subsample Factor 1 is, however, more inclusive than its analogue. Most noticeable is the presence of variables NONWHITE and NOPLUMB with significant negative loadings.

Factor 2 in Table 50B consists of:

| <u>Positive Loadings</u> | <u>Negative Loadings</u> |
|--------------------------|--------------------------|
| AGEDPOP NOTV URBAN | GROWTH |

Factor 2 has no analogue in the county subsample, and taps an aged population living in urban areas which has grown little, or not at all, over the last decade. This factor is conceptualized as representing a stagnant urban population.

Factor 3 consists of:

| <u>Positive Loadings</u> | <u>Negative Loadings</u> |
|--------------------------|--------------------------|
| AGESPFRTY CUMFRTY | |

Factor 3 thus taps a dimension of high fertility in the data.

Factor 4 consists of:

| <u>Positive Loadings</u> | <u>Negative Loadings</u> |
|--------------------------|--------------------------|
| FLFPR | |

Factor 4 thus represents female labor force participation.

Factor 5 consists of:

| <u>Positive Loadings</u> | <u>Negative Loadings</u> |
|--------------------------|--------------------------|
| AGRCLTRE | |

Factor 5 extracts the agricultural occupation from the data.

Factor 6 consists of:

| <u>Positive Loadings</u> | <u>Negative Loadings</u> |
|--------------------------|--------------------------|
| MLFPR | NOJOB |

Factor 6 represents male labor force participation and is similar to Factor 4. Factors 4 and 6 in the city subsample closely represent Factor 2 in the county subsample. The difference seems to be that in urban areas male and female labor force participation are not dependent on one another, whereas in the counties they are. This, in turn, probably reflects the differing proportions of nonmarried (single, divorced, separated)

women living in metropolitan areas and the higher levels of female labor force participation found in urban areas.

In order to use the factors and factor loadings in a multiple regression analysis, each factor is converted into a new independent variable. These new variables will be more complex than the twenty variables since each will be a composite of several variables. The actual transformation of a factor to a new independent variable follows the general pattern:

New Independent Variable =

$$[(\text{Loading of Variable } X_1)^2$$

$$(X_{i1} - \bar{X}_1) / SD_{X_1}] +$$

$$[(\text{Loading of Variable } X_2)^2$$

$$(X_{i2} - \bar{X}_2) / SD_{X_2}] + \dots$$

$$[(\text{Loading of Variable } X_n)^2$$

$$(X_{in} - \bar{X}_n) / SD_{X_n}]$$

To create a new variable from Factor 6, Table 50B, we would calculate:

$$[(-.53249)^2 (\text{NOJOB} - \bar{X}_{\text{NOJOB}}) / SD_{\text{NOJOB}}] +$$

$$[(.53947)^2 (\text{MLFPR} - \bar{X}_{\text{MLFPR}}) / SD_{\text{MLFPR}}]$$

B. Results

Tables 51-53 present the results of the analysis for each dependent variable.* Table 51 includes beta weights derived from the step-wise multiple regression analysis for each factor, as well as the multiple correlation coefficient (R^2). The multiple correlation coefficient can be interpreted as expressing the percent of variation explained by all the independent variables (factors) combined.² Table 51 indicates the percent of R^2 accounted for by each beta coefficient. Table 53 offers a summary look at the

*The factors discussed in the analysis of independent variables are not identical to those discussed above. These new factors are created by removing the appropriate independent variable from the set of all variables and repeating the factor analysis on this basis.

TABLE 51. BETA COEFFICIENTS FOR MULTIPLE REGRESSION ANALYSIS

| Dependent Variable and Subsample | Beta Coefficients (B's) | | | | | | R ² |
|-------------------------------------|-------------------------|----------|----------|----------|----------|----------|----------------|
| | Factor 1* | Factor 2 | Factor 3 | Factor 4 | Factor 5 | Factor 6 | |
| INCOME-Counties | .733 | .004 | .127 | -.136 | ---- | ---- | 2304.26 |
| INCOME-Cities | .710 | .399 | .044 | .079 | -.254 | ---- | 2964.22 |
| MEDED-Counties | .713 | .086 | .186 | -.046 | ---- | ---- | 9.61 |
| MEDED-Cities | .802 | -.087 | -.152 | -.122 | -.046 | ---- | 11.38 |
| MIGRANTS-Counties | .516 | -.466 | -.031 | -.036 | ---- | ---- | 15.53 |
| MIGRANTS-Cities | .769 | -.237 | -.081 | -.160 | -.032 | ---- | 25.66 |
| MLFPR-Counties | .170 | .262 | .381 | -.031 | ---- | ---- | 73.34 |
| MLFPR-Cities | -.148 | .139 | -.542 | .289 | -.401 | ---- | 76.47 |
| FLFPR-Counties | .231 | -.119 | .424 | -.028 | ---- | ---- | 38.04 |
| FLFPR-Cities | .277 | -----** | .085 | -.192 | -.211 | -.078 | 43.97 |

*Conceptualization of factors changes between each subsample and each dependent variable. See Table 53 for precise meaning of each factor.

**Factor 2 was not entered into the multiple regression equation because it failed to satisfy F-level and tolerance level minimum criteria.

TABLE 52. PERCENT OF MULTIPLE CORRELATION COEFFICIENT (R²) EXPLAINED BY BETA COEFFICIENTS

| Dependent Variable and Subsample | R ² | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Factor 5 | Factor 6 | Total, Factors 1-6 |
|-------------------------------------|----------------|----------|----------|----------|----------|----------|----------|-----------------------|
| | | | | | | | | |
| INCOME-Counties | 73.8% | 96.3% | 0.1% | 1.6% | 2.0% | ----- | ----- | 100% |
| INCOME-Cities | 82.3% | 68.4% | 19.6% | 0.2% | 0.5% | 1.6% | 9.7% | 100% |
| MEDED-Counties | 78.0% | 95.3% | 0.6% | 3.8% | 0.3% | ----- | ----- | 100% |
| MEDED-Cities | 73.6% | 95.9% | 0.6% | 2.0% | 1.2% | 0.3% | ----- | 100% |
| MIGRANTS-Counties | 76.7% | 82.9% | 16.9% | 0.1% | 0.1% | ----- | ----- | 100% |
| MIGRANTS-Cities | 66.1% | 82.0% | 3.5% | 0.7% | 2.5% | 11.2% | 0.1% | 100% |
| MLFPR-Counties | 39.6% | 5.5% | 26.5% | 67.8% | 0.2% | ----- | ----- | 100% |
| MLFPR-Cities | 52.3% | 2.8% | 2.2% | 41.1% | 16.8% | 29.3% | 7.2% | 100% |
| FLFPR-Counties | 29.2% | 10.3% | 3.4% | 86.1% | 0.2% | ----- | ----- | 100% |
| FLFPR-Cities | 16.3% | 42.2% | ----- | 2.1% | 20.4% | 34.3% | 1.0% | 100% |

TABLE 53. FACTOR COMPOSITION

[illegible]

composition of each factor and should be used in conjunction with Tables 51 and 52.

1. Per Capita Income (INCOME). In the county subsample factors 1, 2, and 3 are directly related to INCOME; Factor 4 is inversely related. Factor 1 representing the SES dimension, is clearly dominant among the factors, with a beta weight of .733. This factor alone accounts for 96% of the explained variation in INCOME and 71% of the total variation in INCOME.

Factor 2 represents a young population characterized by high age-specific fertility and employment in white and blue collar occupations. This factor has a very small beta coefficient, .004, and explains very little of the variation in INCOME.

Factor 3 represents labor force participation and is directly related to INCOME. Its beta coefficient is small, .127, and it accounts for only about 1.5% of the explained variation in INCOME.

Factor 4 is inversely related to INCOME, and represents two linked variables, NONWHITE and CUMFRTY. This factor and Factor 3 are approximately equal in both the size of the beta weight and their contribution to R^2 .

In the city subsample five factors are directly related to INCOME, while Factor 6 is inversely related. Factors 3, 4, and 5 are ignored, due to their small beta weights.

Factor 1 again represents the SES dimension, and has a high positive beta weight of .710. This factor accounts for 68% of the explained variation in INCOME, and 56% of the total variation in INCOME.

Factor 2 is composed of only one variable, FLFPR, and is directly related to INCOME. Its beta coefficient is moderately high, .399, and accounts for approximately 20% of the explained variation in INCOME, and 16% of the total variation in INCOME.

Factor 6 is composed of two related variables, male labor force participation (MLFPR) and male unemployment (NOJOB). Since NOJOB has a positive loading and MLFPR a negative loading, Factor 6 is inversely related to INCOME. This factor accounts for about 10% of the explained variation in INCOME, and 8% of the total variation.

In both subsamples R^2 is reasonably high (.738 for counties and .823 for cities), indicating that the factors have explained a majority of the variation in per capita income. In both subsamples Factor 1, representing SES, is dominant, although it is more dominant for the county subsample. Factor 1 discloses that the variables COLGRADS, MEDED, MIGRANTS, URBAN, and WHTCLR measure the positive aspect of SES, and that BLCLR, NATIVE, NOHGHSC, and NOPLUMB measure the negative aspect. Equation (3) reveals that using factors, rather than individual variables, results in an analysis which avoids the complications caused by high multicollinearity between independent variables.

2. Median Education (MEDED). Analysis of the dependent variable MEDED is quite similar to that of INCOME. For the county subsample, three factors are directly related to MEDED; one factor is inversely related. Factors 2 and 4 are ignored, due to the small beta coefficients.

Factor 1 again represents SES and is directly related to MEDED and has a sizeable beta coefficient of .713 which accounts for 95% of the explained variation in MEDED and 74% of the total variation in MEDED.

Factor 3 consists of three variables, MLFPR, FLFPR, and NOJOB. Both MLFPR and FLFPR have positive factor loadings; NOJOB has a negative factor loading, and the factor is directly related to MEDED. The beta coefficient for Factor 3 (.186) is small and accounts for only 4% of the total R^2 .

In the city subsample Factor 1 again predominates, being directly related to MEDED and having a beta coefficient of .802. Factor 1 accounts for 96% of the explained variation in MEDED, and 71% of the total variation. Factors 2 through 5 are relatively unimportant and together account for only 4% of R^2 .

The only point of contrast between the two subsamples is the relatively higher beta coefficient of Factor 3 in the county subsample, as compared to the beta coefficient for Factor 2 in the city subsample. We conclude that whereas education does influence labor force participation rates in Virginia counties, in Virginia cities education has no association with female labor force participation rates. This latter situation could develop because in the cities most jobs filled by women do not demand a high level of education and

are thus filled by women with a wide range of educational backgrounds.

In both subsamples R^2 is reasonably high, .780 for counties and .736 for cities. As with INCOME, Factor 1, representing SES, accounts for almost all of the explained variation in MEDED.

3. Interstate Migrants (MIGRANTS). The dependent variable MIGRANTS refers to interstate migration by the population aged five years and over. In the county subsample Factors 1 and 2 have moderately large beta coefficients; Factors 3 and 4 have small beta coefficients and may be ignored.

Factor 1, representing SES, has a beta coefficient of .516. While this is a fairly large coefficient, it is much less than Factor 1 beta coefficients for INCOME and MEDED. This is accounted for by the presence of Factor 2 with a beta coefficient of -.466. In combination these two factors account for 99.8% of the explained variation in MIGRANTS.

Further analysis of Factor 2 indicates that this factor is picking up a group of counties which might best be described as "stagnant." These counties are characterized as having a large proportion of their population aged 65 and over, high proportions of the labor force in agricultural occupations, a high incidence of substandard housing, low age-specific fertility and a low, or negative, rate of population growth. Not unexpectedly, Factor 2 is inversely related to MIGRANTS.

It is interesting to note that the beta coefficients for Factor 1 and Factor 2 are of approximately equal size. This indicates that for the prospective interstate migrant to a Virginia county, the choice of residence location depends on two independent considerations. First, the population in the county must be characterized by high SES traits, and second, the area must not be stagnant. Even a relatively prosperous county would be unattractive to interstate migrants unless it was also experiencing moderate to high population growth.

In the city subsample Factors 3 and 6 have low beta coefficients and are ignored. Factor 1, representing SES, has a large beta coefficient of .769 and is directly related to MIGRANTS. Factor 1 accounts for 82%

of the explained variation in MIGRANTS, and 62% of the total variation.

Factor 2 is composed of the single variable FLFPR, has a positive factor loading, and is inversely related to MIGRANTS. One possible explanation for this finding is that areas with large military populations tend to have relatively low rates of labor force participation. Possibly, the spouses of military personnel are less likely to seek employment than are other women. At the same time, the presence of significant numbers of military almost insure high rates of migration.

Factor 4 taps a high fertility dimension in the data, and it also has a negative beta coefficient. A possible explanation is that those areas characterized by both high age-specific and cumulative fertility are simultaneously areas whose population would score low on the SES factor.

Factor 5 is somewhat unusual. This factor consists of two variables, URBAN and AGRCLTRE. URBAN has a negative factor loading; AGRCLTRE a positive loading. Factor 5 is, however, directly related to MIGRANTS. A possible explanation is that Factor 5 is locating rural areas within Virginia cities, a seeming contradiction until it is remembered that several cities in Virginia were once counties and still contain predominantly rural areas within their boundaries. It thus appears that, holding SES level constant, interstate migrants prefer the less urbanized areas of Virginia cities.

4. Male Labor Force Participation Rates (MLFPR). The dependent variables MLFPR and FLFPR have consistently low R^2 's. This indicates that those independent variables necessary for an adequate explanation of labor force participation rates were not included among the twenty variables selected for analysis. Possibly, a detailed age breakdown crosstabulated by marital status and presence of children of specific ages would improve the multiple regression estimates, but we have not attempted to add this detail.

In the county subsample Factors 2 and 3 have moderately high beta coefficients, and both factors are directly related to MLFPR.

Factor 2 represents a young population with high age-specific

fertility and employment in nonagricultural occupations. The beta coefficient for Factor 2 is .262 and accounts for 27% of the explained variation in MLFPR, but only 10% of the total variation in MLFPR.

Factor 3 is composed of the single variable FLFPR, is directly associated with MLFPR, and has a beta coefficient of .381. This coefficient accounts for 68% of the explained variation in MLFPR and 27% of the total variation.

In the city subsample Factors 3, 4, and 5 have moderately large beta coefficients. These factors indicate that high rates of male labor force participation are associated with: (a) a high growth rate, (b) high fertility rates and high proportions nonwhite, and (c) high proportions of workers in nonagricultural occupations.

5. Female Labor Force Participation Rates (FLFPR). In the county subsample only Factor's 1 and 3 have moderately large beta coefficients (.231 and .424, respectively). High rates of female labor force participation are thus directly related to high SES (Factor 1), high growth rates and high rates of male labor force activity, and low male unemployment (Factor 3). These two factors, however, account for only 3% and 25% of the total variation in FLFPR.

In the city subsample Factors 1, 4, and 5 are moderately large, indicating that FLFPR increases with: increases in SES (Factor 1), decreases in fertility and percentage nonwhite (Factor 4), and increases in the percent of urban population, plus decreases in the agricultural-related occupations (Factor 5).

Figure 25. Planning Districts of Virginia*

- 1 **Lenowisco** (City: Norton / Counties: Lee, Scott, Wise)
- 2 **Cumberland Plateau** (Counties: Buchanan, Dickerson, Russell, Tozwell)
- 3 **Mount Rogers** (Cities: Bristol, Galax / Counties: Bland, Carroll, Grayson, Smyth, Washington, Wythe)
- 4 **New River Valley** (City: Radford / Counties: Floyd, Giles, Montgomery, Pulaski)
- 5 **Fifth** (Cities: Clifton Forge, Covington, Roanoke, Salem / Counties: Alleghany, Botetourt, Craig, Roanoke)
- 6 **Central Shenandoah** (Cities: Buena Vista, Harrisonburg, Lexington, Staunton, Waynesboro / Counties: Augusta, Bath, Highland, Rockbridge, Rockingham)
- 7 **Lord Fairfax** (City: Winchester / Counties: Clarke, Frederick, Poge, Shenandoah, Warren)
- 8 **Northern Virginia** (Cities: Alexandria, Fairfax, Falls Church / Counties: Arlington, Fairfax, Loudoun, Prince William)
- 9 **Rappahannock - Rapidan** (Counties: Culpeper, Fauquier, Madison, Orange, Rappahannock)
- 10 **Thomas Jefferson** (City: Charlottesville / Counties: Albemarle, Fluvanna, Greene, Louisa, Nelson)
- 11 **Central Virginia** (Cities: Bedford, Lynchburg / Counties: Amherst, Appomattox, Bedford, Campbell)
- 12 **West Piedmont** (Cities: Danville, Martinsville / Counties: Franklin, Henry, Patrick, Pittsylvania)
- 13 **Southside** (City: South Boston / Counties: Brunswick, Halifax, Mecklenburg)
- 14 **Piedmont** (Counties: Amelia, Buckingham, Charlotte, Cumberland, Lunenburg, Nottoway, Prince Edward)

- 15 **Richmond Regional** (City: Richmond / Counties: Charles City, Chesterfield, Goochland, Hanover, Henrico, New Kent, Powhatan)
- 16 **RADCO** (City: Fredericksburg / Counties: Caroline, King George, Spotsylvania, Stafford)
- 17 **Northern Neck** (Counties: Lancaster, Northumberland, Richmond, Westmoreland)
- 18 **Middle Peninsula** (Counties: Essex, Gloucester, King and Queen, King William, Middlesex)
- 19 **Crater** (Cities: Colonial Heights, Emporia, Hopewell, Petersburg / Counties: Dinwiddie, Greensville, Prince George, Surry, Sussex)

- 20 **Southeastern Virginia*** (Cities: Chesapeake, Franklin, Norfolk, Portsmouth, Suffolk, Virginia Beach / Counties: Isle of Wight, Nonsemond, Southampton)
- 21 **Peninsula** (Cities: Hampton, Newport News, Williamsburg / Counties: James City, York)
- 22 **Accomack - Northampton** (Counties: Accomack, Northampton)

* Nonsemond County became a city on July 1, 1972, then merged with the City of Suffolk on January 1, 1974. This map shows Virginia's Planning Districts before the formation of this new City of Suffolk.

